Xerox Electronic Documentation
Solution for Xerox Printers

Xerox 4500 PS ETH
User's Guide

Doc. no. D60328   Revision 01

WARNING:
This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

EMC directive:
This product observes the rules and regulations of the EMC directive. If so required, a declaration of conformity in local language stipulating the applied rules and regulations can be obtained.

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Preface

July 1997

We congratulate you on your purchase of the *Xerox 4500 PS ETH*. The *Xerox 4500 PS ETH* forms part of a series of print servers developed with the purpose of migrating printing know-how into the LAN environment.

This manual covers the installation and configuration of the *Xerox 4500 PS ETH* operating in different environments. For this reason the Xerox 4500 PS ETH will throughout this manual be referred to as **Xerox 4500 PS ETH**. This notation covers the following Xerox 4500 PS ETH variants:
Xerox 4500 PS ETH supports native and ICDS datastreams
Xerox 4500 PS ETH IPC supports native, ICDS and IPDS datastreams
Xerox 4500 PS ETH 3270 or 5250 supports native, ICDS and SCS (SNA and DCA) datastreams.

The user is required to have working knowledge of the relevant host environments: PSF/MVS, PSF/2, PSF/AIX, PSF/400, TCP/IP and ida PSS. For details on the configuration of these environments, see the specific chapters.

In addition, the user is assumed working knowledge of the relevant Host Operating System and relevant LAN based protocols.
NOTE:
In the manual reference is made to PSF for S/370-S/390 - this term is to be construed as PSF/MVS, PSF/VM and PSF/VSE.

Prerequisite Manuals

- The original printer manual

Related Manuals

The relevant documentation for the host systems and supported printers should be consulted.

- **For SNMP support**, see:
  - Simple Network Management Protocol, RFC 1157
  - MIB for network management of TCP/IP based internets, RFC 1213

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Items Supplied with Xerox 4500 PS ETH

Before you begin installing the *Xerox 4500 PS ETH* make sure that you have all the items shown below.

- **Xerox 4500 PS ETH interface**

- **Configuration and printer driver diskettes**

- **idaSetup kit (if IPDS top):**
  - ✓ idaSetup installation diskettes for DOS and Windows
  - ✓ Documentation:
    IPDS Programmer's Guide
    D60253

- **Product documentation**
  - ✓ "Plug and play" documentation :
    Quick Guide:
    D10328
  - ✓ Advanced configuration :
    Xerox 4500 PS ETH
    User's Guide
    Doc. no. D60328
  - ✓ *Informative files:*
    - PTF levels for Midrange environment
      "AS400PTF"
    - Redirected SNA AFP Printing
      "Redirect"
    - (FSL Reference Guide)
      "**FSL_REF"**
  - ✓ Acrobat Viewer
    Tool for viewing electronic documentation

> **NOTE**:
> Readme file supplied with the product setup files will provide you with details.

1. Introduction to Xerox 4500 PS ETH

The *Xerox 4500 PS ETH* is basically viewed as a "Plug and Go" product in terms of printing directly from Windows using NetBIOS/NetBEUI. If you want to use one of the other protocols, a minimum configuration on protocol level is required. This minimum configuration is system dependent and no default value will apply. For details on minimum configuration on protocol level, see the chapter: "Configuration".

Each unit is capable of supporting multiple print sessions at the same time, each with its own resource environment. This ensures maximum use of downloaded resources and minimises network traffic.

Direct host print

Native data: PCL, ASCII, Postscript etc.

The *Xerox 4500 PS ETH* is capable of printing AFP based documents as well as <u>native data</u>. The *Xerox 4500 PS ETH* offers support for native and ICDS datastreams. The *Xerox 4500 PS ETH 3270/5250* has SCS/DCA support with an FSL option module as well as the features offered with the *Xerox 4500 PS ETH.* The *Xerox 4500 PS ETH IPC* offers support for native, ICDS and IPDS datastreams.

Direct host print via TCP/IP

Support for direct AFP host print via the TCP/IP PPR/PPD bi-directional protocol allows for direct printing control without the need for configuring intermediate systems. The *Xerox 4500 PS ETH* has DCA SCS support with an FSL option module as well as the features offered with the *Xerox 4500 PS ETH.*

The ICDS and IPDS modules allow the unit to communicate directly with IBM mainframe and midrange systems using the TCP/IP PPR/PPD (Page Printer Requester/Page Printer Daemon) bi-directional protocol.

LAN print

With its capability to handle different network protocols simultaneously, the *Xerox 4500 PS ETH* is ideal in a mixed environment. It allows you to connect your printers anywhere in an Ethernet network giving all network users access to shared printer resources.

The *Xerox 4500 PS ETH* is a remote device for the Ethernet environment supporting the most widely used protocols in the LAN environment. See section 1.1 "Supported Protocols" for details.

Xerox 4500 PS ETH output / print share

Although the *Xerox 4500 PS ETH* does not have a spool function, it allows several print sessions to be active simultaneously. This means that print data can be received in "parallel" from various print applications .

To avoid print mixing , some sharing functions have been implemented.
See the chapter "Configuration " for details.

Redirected host print

The *Xerox 4500 PS ETH* may also be used for redirected printing using
the ida ReRouter, idaMON or idaIPPC .
See the separate document "Redirected SNA AFP Printing - Ethernet"
included on the diskette for details).

💾 Filename: "**Redirect**"

1.1 Supported protocols

The *Xerox 4500 PS ETH* provides support for the protocols mentioned in this
section. The multiple procotol support makes it possible to have an easy
conversion to the IBM hosts, Windows NT and 95, Novell NetWare, OS/2 and
UNIX systems.

1.1.1 IPX/SPX protocol

ENP - EPS			*Application Layer*
SPX	**SAP**	**NCP**	*Transport Layer*
IPX			*Network Layer*
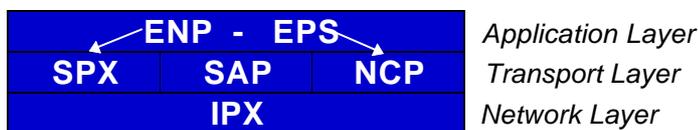
Application Layer
ENP: **E**mbedded **NP**rinter
Implements the NetWare remote printing functionality.
Communicates with SPX.

EPS: **E**mbedded **P**rint**S**erver
Monitors the print queues and printers. Is able to monitor print
queues on different network servers.
Communicates with NCP.

Transport Layer
SPX: Provides connection oriented services and guarantees packet delivery.
SAP: Provides service name to network address resolution.
NCP: Request/response protocol and the interface to the NetWare operating
system.

Network Layer
IPX: Provides connection-less oriented data services.

1.1.2 TCP/IP protocol

The TCP/IP (Transmission Control Protocol/Internet Protocol) protocol is routable and enables the *Xerox 4500 PS ETH* to reside on any network in an Internet environment.

The following TCP/IP protocols are supported by the *Xerox 4500 PS ETH* :

Supported TCP/IP Protocols	
IP Layer	**Internet Layer**
IP (RFC 791)	Internet Protocol
ARP (RFC 826)	Address Resolution Protocol
TCP Layer	**Transport Layer**
TCP (RFC 793)	Transmission Control Protocol
UDP (RFC 768)	User Datagram Protocol
ICMP	Internet Control Message Protocol
Application Layer	
Bootp (RFC 951,1048 and 1084)	Bootstrap Protocol
LPD (RFC 1179)	Line Printer Daemon
SNMP (RFC 1157)	
SNMP - MIB II (RFC 1213)	

SCS-DCA Datastream

When running in SCS DCA mode, the Xerox 4500 PS ETH will emulate the Xerox 3x-400 interface products.

The *Xerox 4500 PS ETH* supports SCS DCA printing via the TCP/IP LPR/LPD protocol.

The *Xerox 4500 PS ETH* provides support for SCS DCA and i-data FSL commands, thus being fully compatible with the *ida 812-1x* range of products and emulated IBM printers.

NOTE:

If you do not have TCP/IP on the host, redirected printing can be performed using the *ida ReRouter*. For details on redirected printing, see the separate document included on the diskette " **Redirect**" (*Redirected SNA AFP Printing - Token Ring).*

1.1.3 NetBEUI/NetBios protocol

With support for the NetBeui/NetBios network protocols, the *Xerox 4500 PS ETH* enables printing from Microsoft (Windows 95 and NT) and IBM LAN network (OS/2) environments using the SMB (*Server Message Block*) printer protocol.

As default the NetBEUI/NetBios protocol will be enabled and as such is ready to print using the default values.

1.1.4 PU/LU protocol

When running in SNA SCS mode, the *Xerox 4500 PS ETH* will emulate the Xerox 3270 interface products providing support for LU1 SCS, FSL and ICDS.

The *Xerox 4500 PS ETH* supports SNA SCS printing via PU2/LU1. It is installed and behaves as a network connected SNA PU2 cluster controller with 1 printer attached. This can be equated to a PC with a single LU1 attached printer.

The *Xerox 4500 PS ETH* provides support for SCS and i-data FSL commands, thus being fully compatible with the *Xerox 3270* range of products and emulated IBM printers.

Emulation
The product will emulate the IBM 4028, IBM 3116 or similar printers running SCS (LU1) mode. Print jobs from ida PSS will be supported in Print mode.

1.1.5 ida 802.2 protocol

Native data is sent via the LPT monitor program idaMON, and IPDS data is sent via the IPDS redirecter program idaIPPC.

idaMON
idaMON is a background monitor program which communicates with the *Xerox 4500 PS ETH* on the Token Ring and with the configuration program *idaPMUT* L redirecting LPT print to the *Xerox 4500 PS ETH.*

idaIPPC
The idaIPPC is an OS/2 based redirecter included with the *Xerox 4500 PS ETH IPC* kit which functions as a bridge between the Host and the *Xerox 4500 PS ETH IPC*.

For details on redirected printing, see the separate document included on the diskette "Redirected SNA AFP Printing - Token Ring".

1.1.6 Illustration

The illustration in the following indicates which printer protocols are used for the supported datastreams.

IPDS Data	**Native Printer Data**	**ICDS Data**	**SNA SCS Data**	**DCA SCS Data**
- PPR (PSF/xxxx - *ida ReRouter*) - ida 802.2 (idaIPPC) - PU-LU	- LPR (DOS TCP/IP OS/2 TCP/IP UNIX, etc) - ida 802.2 (idaMON) - ENP/EPS (IPX/SPX) - NetBios/NetBeui (SMB)	- PPR (PSS, *ida ReRouter*) - PU/LU	- PU/LU	- LPR

PrintServer

Printer
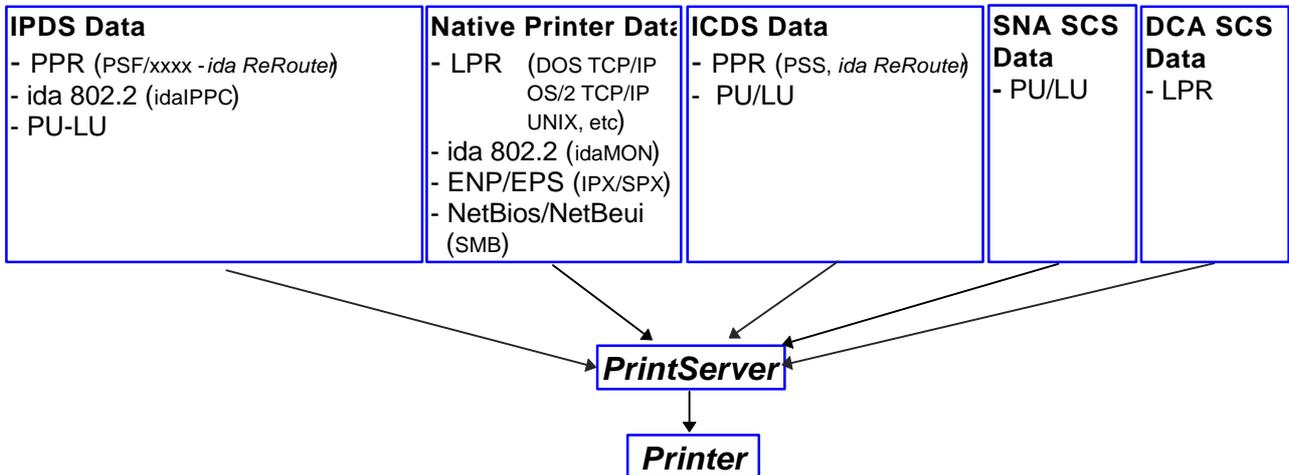
1.2 The Xerox 4500 PS ETH features

The *Xerox 4500 PS ETH* has the following features:

Xerox 4500 PS ETH:

- FLASH prom for firmware upgrading and download of settings

- Online microcode upgrade facility

- High Performance Intel 80960 JX RISC Processor offering increased processing speed

- Alternative setup routines for the *Xerox 4500 PS ETH*:
  - via PSInst32
  - via Web browser
  - via Telnet
  - via BOOTP server
  For details, see the chapter 3 "Configuration".

LAN

- Supports multiple protocols

- Supports all printers for LAN data.

- Redirects LAN native data directly to printer

- Support for Novell's embedded system's technology (NEST) in the form of embedded NPRINTER and embedded PSERVER.

ICDS

- Supports ICDS data streams to PCL and PostScript printers.

- ICDS printing directly from ida PSS - version 6.01 (*Xerox 4500 PS ETH*)

Xerox 4500 PS ETH IPC:

- Multiple IPDS print sessions - each with own resource environment

- Download of font sets

- IBM 3812/16, 3112/16, 3912/16 and 4028 IPDS emulations

- 2 - 18 Mb internal RAM for local storage of IPDS resources downloaded from the HOST.

- *Xerox 4500 PS ETH IPC* prints IPDS data directly from PSF/MVS, PSF/400, PSF/2 and PSF/AIX.

- *Xerox 4500 PS ETH IPC* prints redirected IPDS data from PSF/MVS, PSF/VM, PSF/VSE, PSF/400
  Redirection can be accomplished with the following products:
  PSF/2, PSF/AIX, ida ReRouter, ida IPPC

- IPDS code downloadable to Flash PROM from PC, host or PSinst32. The IPDS code is delivered in AFPDS format and can be printed like any other AFPDS file. Upon completion of the print job, the IPDS code will have been upgraded.

Xerox 4500 PS ETH 3270 & 5250:

- SCS support
  Xerox 4500 PS ETH with IBM 3270 support
  - printing SNA via PU2 /LU1 including support for the i-data FSL
   concept.
  Xerox 4500 PS ETH with IBM 5250 support
  - printing DCA via TCP/IP LPR/LPD

  Add to this all the features supported by the *Xerox 4500 PS ETH*

1.3 System requirements

This section will briefly touch upon the various software requirements needed for the environments supported by the *Xerox 4500 PS ETH.*

A specific description of system requirements will be provided with each supported printing environment. You are referred to the specific chapter describing the environment. See Table of Contents for an overview, or use the search facility provided with the Acrobat Reader.

1.3.1 All environments:

- Ethernet LAN Attachment for 10Base2 and 10BaseT

   Make sure that you have the required LAN cables to attach the *Xerox 4500 PS ETH.*

1.3.2 Direct AFP print - mainframe / midrange

PSF/MVS
PSF/400
PSS/MVS
PSS/VM

1.3.3 LAN based AFP print

PSF/AIX
PSF/2

1.4 Printers Supported

The *Xerox 4500 PS ETH* supports the following printers:

Xerox 4505
Xerox 4510
Xerox 4517
Xerox 4520

See the chapter on Installation for details of how to install the *Xerox 4500 PS ETH* interface into the above supported printers.

2. Installation of Xerox 4500 PS ETH

☞

When unpacking the unit, record the universal MAC address on the label attached to the rear panel of the unit.

Installation, configuration and changes to the mainframe and LAN of the *Xerox 4500 PS ETH* must only be carried out by a person with authority and knowledge of the relevant environment.

> **CAUTION**
>
> The interface can be damaged by static discharge. To prevent this damage, the interface comes wrapped in an antistatic bag.
>
> When you remove the interface from the bag and when you install it, hold the interface by the edges only. Do not touch the components or connections.
>
> Do not throw away the antistatic bag. If the interface is removed from the printer later, it should be kept in the antistatic bag.

2.1 Pre-Installation task

Prior to installing the *Xerox 4500 PS ETH,* you should check that **language setting** (EU or US language) is correct.

⟶ *Remaining switches are to be operated by support staff only.*

Language setting is performed on the *Dip switch bank* The DIP switch bank sits on the interface

2.1.1 EU - US language settings
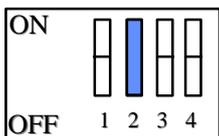
Dip switch number **2** is used for language setting.

You can select between EU and US language settings.

Should you need to change language setting, set dip switch number 2 as follows:

EU language setting - set the switch to **OFF**
US language setting - set the switch to **ON**

2.1.2 National language selection - CPGID

When you have selected either EU or US settings, you should also check that you have the correct default codepage for your national language.

Use the program MakeITDS - supplied with this kit - to change the CPGID. In the following you will find guidelines for entering the CPGID default value in the MakeITDS program.

Make a settings printout (e.g. via the test key) containing IPDS settings and the IPDS resident codepages. The IPDS settings will state the default codepage (CPGID - Code Page Global ID). See the example of the IPDS settings in the following.

Example:

```
IPC - SETTINGS PRINTOUT
Firmware Version  :Sxx xxx xxx


Basic Information
Installed Memory              : 2 Mbytes
Installed Interface           : Ethernet


IPDS Setup
IBM Emulation                 : 4028
Default Codepage (CPGID)      : 01F4H (500)
Codepage Version              : 1
```

In the test page containing the IPDS resident code pages you will find the *decimal* number (second column) to be specified.

Appendix E contains a list of IPDS resident code pages.

In the MakeITDS (idaSetup) program, you must open the menu "IPDS Setup" (see section 2.5.2 in the accompanying manual). In the entry field "Default CPGID" you must enter the decimal number for the required national language.

Example:

You wish to change to the Japanese (English) code page.

Enter decimal no. **281** in the entry field for CPGID.

2.2 Rear panel

Below is an illustration of the rear panel of the *Xerox 4500 PS ETH* followed by a short description of the panel elements.

The rear panel if you have ordered the **10 Base-T** cabling type:
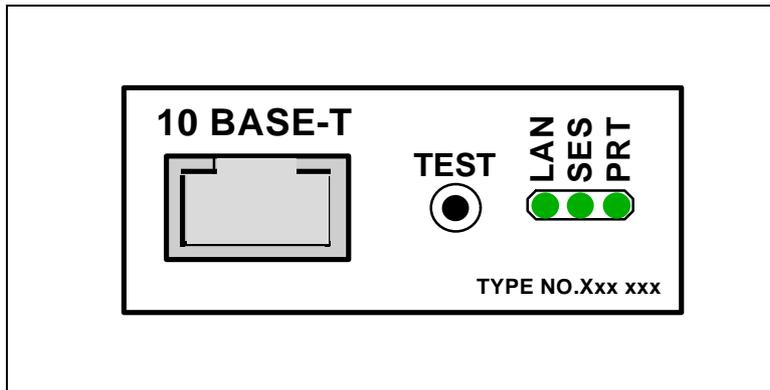
Xerox 4500 PS ETH rear panel: 10 Base-T

The rear panel if you have ordered the **10 Base-2** cabling type:
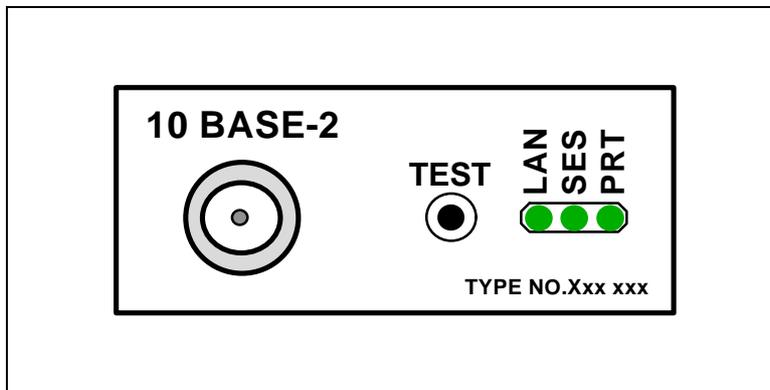
Xerox 4500 PS ETH rear panel: 10 Base-2

Cabling types:
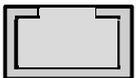
 10 Base-T External RJ 45 connector

 10 Base-2 External BNC connector

TEST
 TEST key
The test key can be used for generating a test page.

LED indicators

The LEDs are used for verification purposes.
The tables below show the LED status once the *Xerox 4500 PS ETH* is up and running.

LAN SES PRT

PRT

Indicating data to the printer.

LED Status	Description
OFF	No data is being sent to the printer
Blinking (async)	Data is being transferred to the printer

LAN SES PRT

LAN

Used to indicate the LAN status

LED Status	*Description*
OFF	No physical connection to LAN
ON	Connection to LAN is established
Blinking	Connection to LAN is established, but no boot reply has been accepted. Refer to the chapter "Configuration of *Xerox 4500 PS ETH*for details.

LAN SES PRT

SES (SION)

Indicates TCP/IP data transmission activity.

LED Status	*Description*
OFF	No data is being transmitted from the LAN (TCP/IP)
Blinking (async)	The SESSION LED blinks when data is being processed or received (TCP/IP)

2.3 Installation procedure

This section describes the installation of the *Xerox 4500 PS ETH* interface into one of the supported printers.

> **NOTE:**
> **Before you start the installation you must power OFF.**

2.3.1 Installing into Xerox 4505 / 4510 printer

1. Remove the plastic cover from the rear of the printer.

2. Loosen the thumb screws.

3. Pull out the motherboard by the handle.

4. Dismantle the two blankets indicated as " **A**" and "**B**" in the figure below. Save the 4 screws for later use.

5. Prior to inserting the interface in the motherboard, you are recommended to tighten loosely one screw in the interface's rear panel and one in the Centronics panel.

6. Place the interface in the slot marked " **A**" and place the Centronics in the slot marked "**B**".
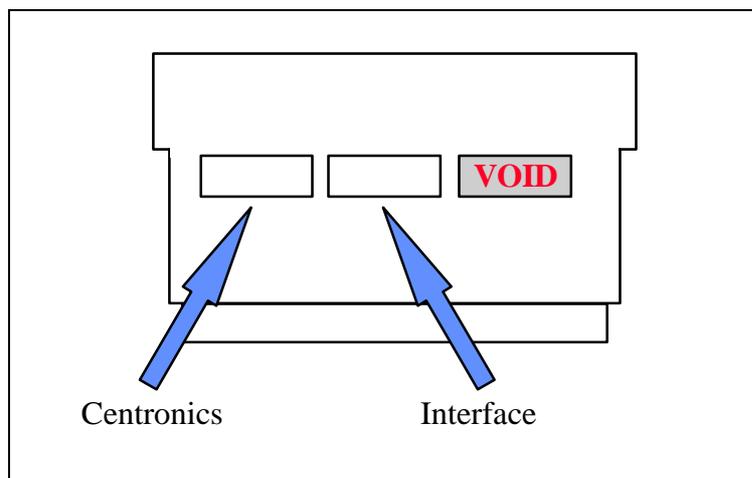
7.   Now fasten the two screws you loosely inserted in step 3.

8.   Fasten the two remaining screws.

9.   Re-insert the motherboard into the printer and fasten the "thumbscrews".

NOTE:
Turn power **ON** and generate a settings printout - pressing the test key on the rear panel - to check that the connection to the printer has been established.

2.3.2 Installing into Xerox 4517 printer

1. Loosen the "thumbscrews".

2. Pull out the motherboard from the printer.

3. Dismantle the two blankets and save the 4 screws for later use (see step 4).

4. Prior to inserting the interface in the motherboard, you are recommended to tighten loosely one screw in the interface's rear panel and one in the Centronics panel.

5. Place the interface in the lower (middle) slot of the motherboard (marked "**A**") and place the Centronics cable in the upper slot (marked " **B**").
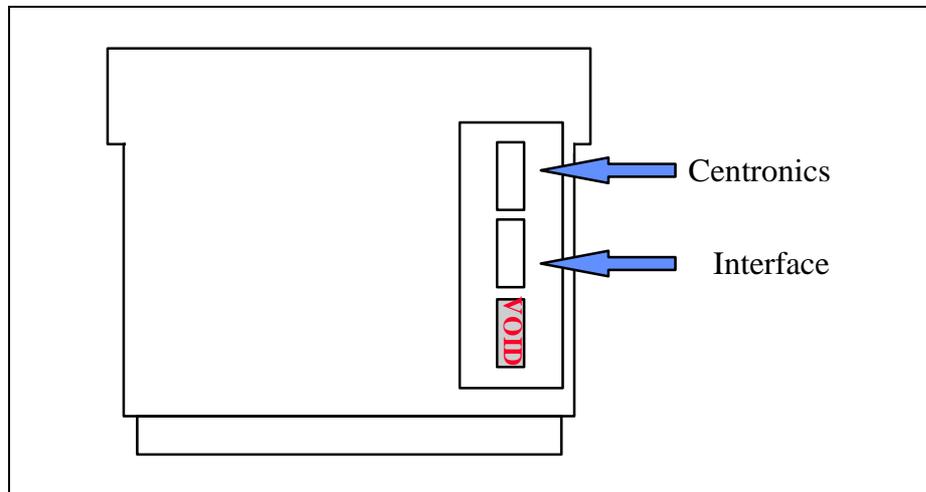
6. Now fasten the two screws you loosely inserted in step 3.

7. Fasten the two remaining screws.

8. Re-insert the motherboard into the printer and fasten the "thumbscrews".

NOTE:
Turn power **ON** and generate a settings printout - pressing the test key on the rear panel - to check that the connection to the printer has been established.

2.3.3 Installing into Xerox 4520 printer

1. Loosen the "thumbscrews".

2. Pull out the motherboard from the printer.

3. Dismantle the two blankets and save the 4 screws for later use (see step 4).

4. Prior to inserting the interface in the motherboard, you are recommended to tighten loosely one screw in the interface's rear panel and one in the Centronics panel.

5. The interface is to be placed in the slot marked " **A**" and the Centronics in the slot marked "**B**".
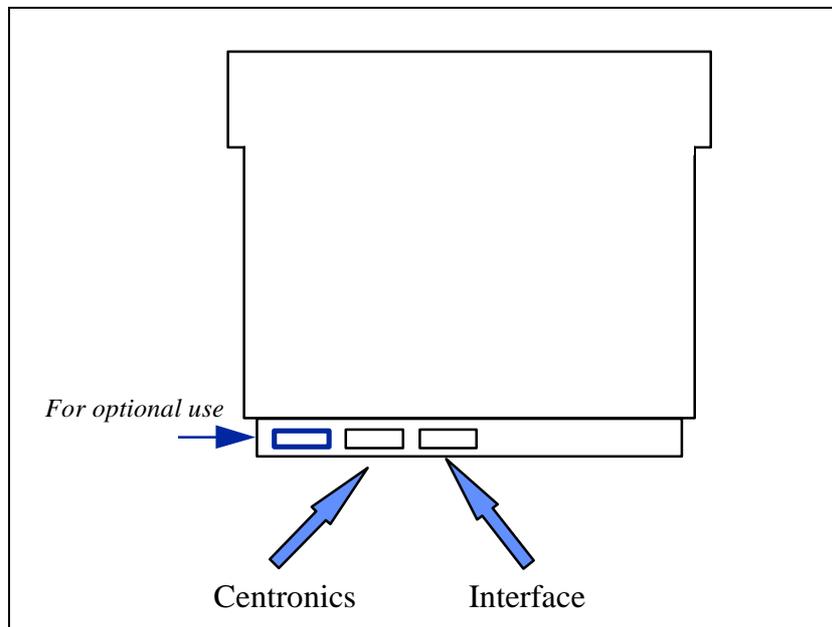
For optional use

Centronics   Interface

6. Now fasten the two screws you loosely inserted in step 3.

7. Fasten the two remaining screws.

8. Re-insert the motherboard into the printer and fasten the "thumbscrews".

NOTE:

Turn power **ON** and generate a settings printout - pressing the test key on the rear panel - to check that the connection to the printer has been established.

2.4 Share timeout

When *Xerox 4500 PS ETH* operates as a print server for multiple environments simultaneously, print corruption is avoided by excluding all other printing as long as a print job is being printed. This is done via a Share Timeout. The Share Timeout defines an idle time for switching between printer sessions. As a default, the Share Timeout is set to 20 seconds, but this can be changed via the configuration file (See the various configuration options for details).

NOTE:
- The Share Timeout must be set to a value which is less than the printer's internal printer share timer.
- **Native Share Strings:**
  No share string functionality is included in the *Xerox 4500 PS ETH* when printing non-IPDS data, so it is up to the application to ensure the correct printer environment.

IPDS Share Strings

To ensure that the printer environment is corre ct for IPDS printing, share strings can be programmed using the MakeITDS Setup program.

IPDS resources downloaded t o the printer are del eted on share boundaries and are therefore downloaded to the next print job (next usage).

2.5 Network installation

1. Switch off the printer.

2. Connect the appropriate network cable to the network port on the PrintServer.

3. Switch on the printer.

4. Test the *Xerox 4500 PS ETH* (by pressing the TEST key).

When IP address has been defined:

If the TCP/IP is enabled, the LAN LED will - *if BOOTP parameter set to YES* - start to flash as the *Xerox 4500 PS ETH* tries to contact a BOOTP server. If no BOOTP server is availab le, the *Xerox 4500 PS ETH* will use defaults. If valid default values are found, the LAN LED will remain lit.

The printer and network installation is now complete. For advanced configuration, see the chapter "Configuration of *Xerox 4500 PS ETH*".

2.6 Installing upgrade modules

This section provides installation guidelines for IPDS or FSL upgrade modules.

1. Disconnect all cables to the *Xerox 4500 PS ETH*.

2. Loosen the thumbscrews and pull out the interface

3. Place the *upgrade* module (be it IPDS or FSL) on the 4 plastic spacers on the base module. Make sure that the pins on the connector J(x) fit correctly.

4. Remount the interface into the printer and fasten th e 2 thumbscrews loosened in step 2.

5. Generate a settings printout to verify the installation of the upgrade module.

The printer and network installation is now complete. For advanced configuration, see the chapter "Configuration".

FIRMWARE DOWNLOAD
Firmware download when the PrintServer is equipped with a top module can be done easily via PSinst32.
See the next section on Psinst32 for details.

3. Configuration

This chapter describes how the *PrintServer* may be subject to a more advanced configuration using the supported setup facilities (see below). However, with a minimum configuration of the selected protocol, the *PrintServer* is ready for operation. For details on operation based on default settings, see below.

3.1 Introduction to configuration

When installing your PrintServer, first of all you must **configure the protocol needed** in order for the system to be able to communicate with your PrintServer.

Thus, you should **ensure that the protocol you want to use for printing has been enabled** on the PrintServer. For example, if you wish to print from Novell you need to enable the IPX/SPX protocol and configure it and if you need to print SNA print from a host, you should enable the PU/LU protocol and configure it. These two protocols are *not* enabled by default in the product. This configuration is carried out in **PSinst32** or using one of the following tools:

⇒ Web Browser
⇒ Telnet
⇒ Configuration file
⇒ BOOTP server

See the section on "Minimum Configuration" for more details on minimum setup via each tool.

When you are sure that you have configured the PrintServer according to your specific needs (see this chapter: chapter 3), you will have to make the needed **definition on the system** in order to be able to send print to the PrintServer. For this you proceed to the chapters 4-17.

3.1.1 Which Configuration Tool Do I Choose to Configure My PrintServer?

When delivered, the product has a MAC address but no IP address.

> **NOTE:**
> **If the PrintServer is to be used for TCP/IP print, you need to define an IP address in the PrintServer. If you wish to configure via the Web browser or using Telnet, you need to define an IP address in the PrintServer as well. You do this in Psinst32 or via BOOTP.**

About the IP Address
The IP address is unique in the Internet environment and consists of a network ID and a host ID.

3.1.1.1 Psinst32
See section 3.3 for details

3.1.1.2 BOOTP Server
BOOTP contains the same options for setup as the front panel (except for the fact that the local MAC address cannot be changed) and may also send config files as well as download firmware. See section 3.7 for details.

3.1.2 In General on Configuration...

The *PrintServer* can be subject to advanced configuration in general. This can be done in a number of ways which will be dealt with later in this document. The various configuration methods are:

⇒ configuration via PSinst32
⇒ configuration using Web browser
⇒ configuration via Telnet
⇒ configuration using a configuration file
⇒ configuration using BOOTP server

3.2 Minimum configuration

With a minimum configuration on protocol level in addition to the default settings, the *PrintServer* is ready for operation.
A minimum configuration is necessary as it is system dependent and no default value will apply. The parameters stated in the minimum configuration are **mandatory** settings for the *PrintServer* to become operational.

To set the minimum configuration parameters, use either the program *PSInst32* or the *minimum configuration file* supplied with the configuration diskettes.

The minimum configuration only covers the most basic printing needs and a more advanced configuration will have to be done using of the other supported configuration methods.

PSInst32
This program is described later in this chapter.

Minimum configuration file
Modify the parameters in the minimum configuration file to suit your system configuration. A sample configuration file is shown later in this chapter. For download of the configuration file, see the section "Configuration using Setup file".

3.2.1 Mandatory settings

TCP/IP

If you wish to operate via the TCP/IP protocol, the parameters below must be set. These are system dependent and thus the default values will not apply. Once these parameters have been defined, printing via LPD and PPD ports can be performed.

Mandatory parameters:

☞ **IP address**
☞ **Subnet mask**
☞ **Gateway**

These parameters should not be chosen at random. Contact your system administrator for details.

IP address
To receive data on your network you need to define an IP address.
This IP address is unique in the Internet environment and consists of a network ID and a host ID.
The IP address uses the address classes A, B and C for the various network sizes.

Subnet masks are determined by assigning ones to bits belonging to the network ID and zeros to bits belonging to the host ID.

The subnet masks may be represented in 32-bit values or as dotted decimal notation.

E.g.:

Class	values	Subnet mask
A	1-126	255.0.0.0
B	128-191	255.255.0.0
C	192-223	255.255.255.0

NETWARE - IPX/SPX

To operate via the IPX/SPX protocol thus using the Embedded Print Server (EPS) and the Embedded Printer (ENP) , you will first have to

☞ **Enable NetWare parameter.**

Subsequently you must define the following NetWare parameters:

☞ **Set mode**   **Bindery (vs. 3.1x)**
                                      DS (vs. 4.x)

☞ **Set Preferred SERVER**

☞ **Set Preferred DSTREE**   **(valid for vs 4.x only)**

☞ **Set DS name context**   **(valid for vs 4.x only)**

☞ **For EPS**
   - mode
   - printserver
   - fileserver

☞ **For ENP**

   - printer number
   - fileserver
   - printserver

SNA-SCS PRINTING - PU-LU

To operate via the PU-LU protocol, you must first set the following:

☞ **Enable PU_LU**

Subsequently, define the following parameters:

☞ **Set Remote MAC** *(of the upstream device)*

☞ **Set IDNUMBER** *(exchange ID number)*

☞ **Set BLOCKNUMBER**

NetBEUI / NetBios

To operate via the NetBeui / NetBios network protocol no need for special setup is required as printing can be performed using default values.

ida 802.2

To operate via the ida 802.2 protocol, no need for special setup is required as printing is performed using default values.

3.3 Configuration using PSinst32

The *PSinst32* is a 32 bit i-data program using ida 802.2 **to be run under Windows 95 or Windows NT.** The program may be used for setting up **basic parameters** in the *PrintServer* via GUI panels. *The program is designed to complement the other PrintServer configuration tools used for more advanced settings.*

This section will limit itself to an outline description. For details you are referred to the extensive Help provided with the program. See the following section.

Firmware download can be done using PSinst32. See the instructions provided in section 3.3.8 "Firmware download".

3.3.1 Program Installation Procedure

Run the installation file from the first disk and follow the instructions given in the installation program.

> **NOTE:**
> **You will be asked whether you wish to "install any PrintServer Drivers?". The drivers referred to here are the various firmwares for the FSL top module.**

3.3.2 Program Execution

> **CAUTION**
> To make the PSinst32 program run correctly, you should check that the Microsoft 32-bit DLC network protocol has been installed correctly.
>
> *The installation procedure varies from Windows 95 to Windows NT.*
> See the instructions immediately below:

Windows '95 DLC Installation Procedure:

> **NOTE:**
> **You need to have access to the CD-ROM with your original operating system.**

Click "Start" in the bottom left corner of the screen
Click "Settings"
Click " Control Panel"
Doubleclick "Network"
Click the "Configuration Form" and check for Microsoft 32-bit DLC

- if installed then click "OK" and continue with the installation of Psinst32
- if NOT then continue below:

Click "Add"
Highlight "Protocol"
Click "Add"
Highlight "Microsoft" in the manufacturer window
Click "Have disk"
    - insert the "PS configuration, disk 2/2" supplied with the *Xerox 4500 PS ETH* in drive a:
Click "OK"
Click "OK" and the installation begins
Click "OK" when returning to the "Network Configuration Form"

You are now prompted to insert the CD-ROM with your original operating system mentioned in the beginning. Please follow the instructions given.

When finished, click "NO" to restart of computer
Click "Start"
Click "Run"
Click "Browse" (your floppy drive a:)
Highlight "DLC32UPD.EXE"
Click "Open"
Click "OK"
Click "Yes" to update
Click "OK" to update completely
Remove floppy disk in drive a: and restart the computer

Windows NT 4.0 DLC Installation Procedure:

> **NOTE:**
> **You need to have access to the CD-ROM with your original operating system.**

Click "Start" in the bottom left corner of the screen
Click "Settings"
Click " Control Panel"
Doubleclick "Network"

Click "Protocol" and check for "DLC Protocol"
    - if already install ed, click "OK" and proceed with the PSinst32 installation
    - if DLC protocol is not installed then click "Add"

Highlight "DLC protocol"
Click "OK"

You are prompted to insert the CD-ROM with your original operating system mentioned in the beginning. The installation commences so please be sure to follow the instructions given.

When finished, click "Close".
Click "Yes" to restart the computer to activate the DLC protocol.
You can now proceed with the PSinst32 installation.

No configuration of the DLC protocol is necessary.

NOTE: - *Windows 95 only* -
The DLC protocol <u>must</u> be the Microsoft 32-bit DLC (on disk 2/2 with configuration files) for the PSinst32 to become operative.

Executing PSinst32

To execute the PSinst32 program, you do as follows:

1. From ![Start], select "**Program**", then "**i-data PrintServer Configuration Tool**" and finally "**PSinst32**".

3.3.3 Help
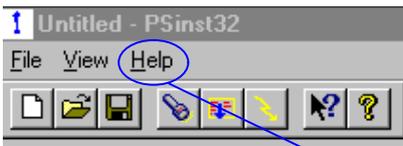
You may obtain further information/Help wherever you are in the program. The main menu and every other menu has a Help button - click this to know more about the present panel or to look up a search word in general.
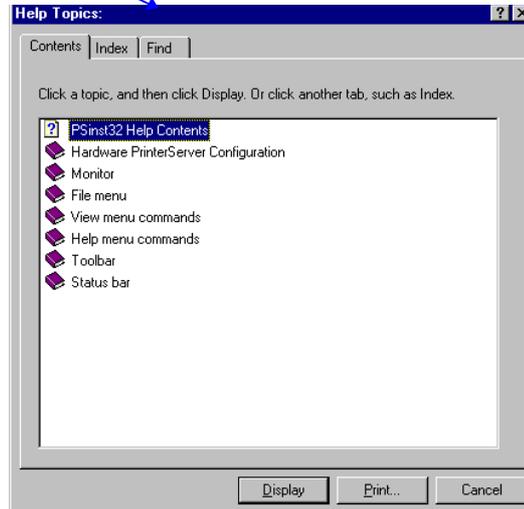
You may also obtain *context sensitive* help for a particular field or form in the program. Go to the toolbar and click this icon.

The cursor will become the shape of a question mark. Now you may choose to query menus from e.g. the File menu simply by clicking it. Or you may click the Property Sheet or Monitor Sheet to obtain further information.

3.3.4 Main menu - Where do I start with PSinst32?

When you have installed the program, you will be met with the Main menu. The main menu has two overall sub-category forms:
- *Hardware PS Property Form*
  From here you enable the protocol(s) of your choice and subsequently make the necessary configuration entries.
- "*Monitor" Property Form*
  When you have selected a DLC download port (LAN), this menu will list all the devices attached to the LAN.

You start your configuration in the *Hardware PS Property Form,* filling in the basic information such as name and system location needed to identify you as a user. Then proceed to the next section in this manual.

Main Window

Monitoring
If you have selected LAN download (*see section 3.3.7*), the "Monitor" form will show all discovered devices by MAC address and Name.

Hardware PS
From this menu you will be able to configure your PrintServer.

Names and system location entered by user

Protocols
Tick the entry for "Enable" before configuration can take place.

| Hardware PS | Monitor |

PrintServer Name

Contact Name

System Location

☐ Enable TCP/IP   Configure TCP/IP

☐ SPX/IPX   Configure SPX/IPX

☐ Enable PU/LU   Configure PU/LU

☐ Enable NetBeui   Configure NetBeui

☑ Boot PrintServer after download

Tick this entry if you wish to boot the PrintServer after download

3.3.5 Program setup - Configuring Your Preferred Protocol

When you have filled in the first three entries in the menu for the Hardware Property Form:
- PrintServer name (a fully qualified domain name)
- Contact name
- Location (physical location of the unit)

.. you proceed to **the selection of your preferred protocol environment and subsequently to the configuration of it.** This is necessary in order for your system to be able to communicate with your PrintServer.

Select between:
- TCP/IP (including SNMP - MIB II)
- IPX/SPX (Netware)
- PU/LU (SNA)
- NetBIOS/NetBEUI (Windows and OS/2)

☞ **Here's how you configure the various protocols:**

3.3.5.1 Configure TCP/IP

You enable the TCP/IP protocol by clicking the check box to the immediate left of the header "TCP/IP". When you have enabled the protocol, you will be able to configure the following entries:

Configure TCP/IP	
Default IP-Addr	0.0.0.0	→ Set default IP address.
Default SubNet Mask	255.255.0.0	→ Set default subnet mask
Default Gateway	0.0.0.0	→ Set default gateway

☐ Use BootP Server   SNMP
→ *Tick this for SNMP application. SNMP - MIB II (see next section in this chapter)*

OK   Cancel   Default   Help

Tick this entry if you wish to use a BOOTP server

Seek additional information here

NOTE: IP Address
To receive data on your network, you need to define an IP address.
This IP address is unique in the Internet environment and consists of a network ID and a host ID.

3.3.5.2 Configure SNMP

If you click the "SNMP" button in the TCP/IP menu, you will see the following screen:

Seek additional information here
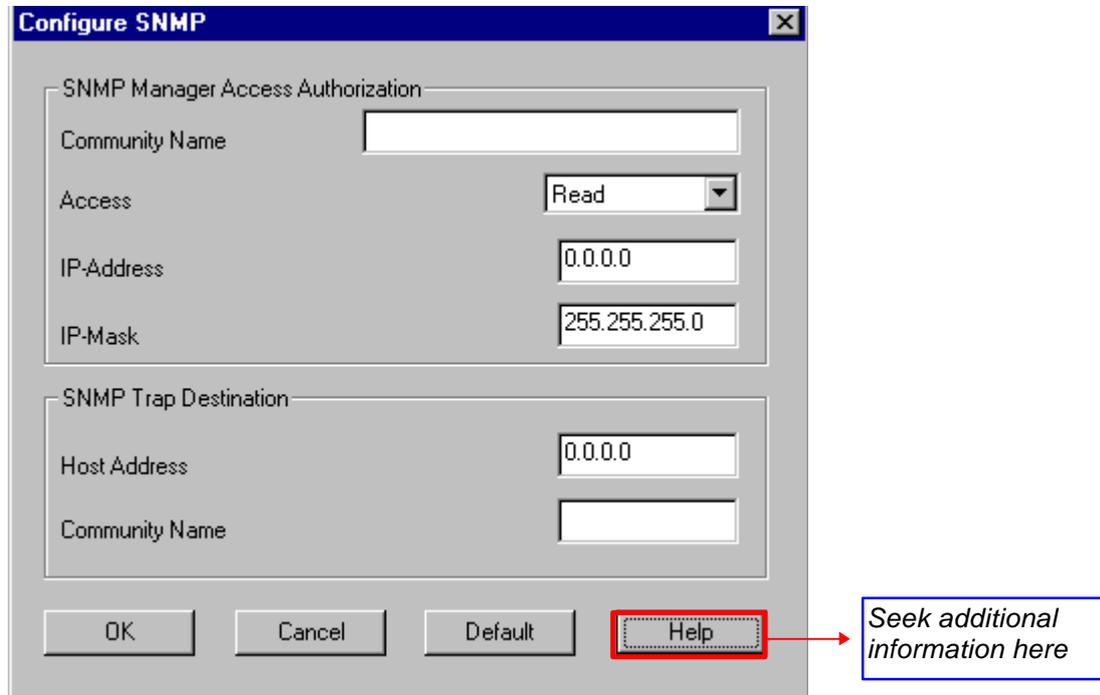
3.3.5.3 Configure SPX/IPX (NetWare - ENP)

Protocol settings

Seek additional information here

For indepth details on the configuration of Embedded NPrinter and Embedded PServer see the extensive Help menu as well as overleaf.
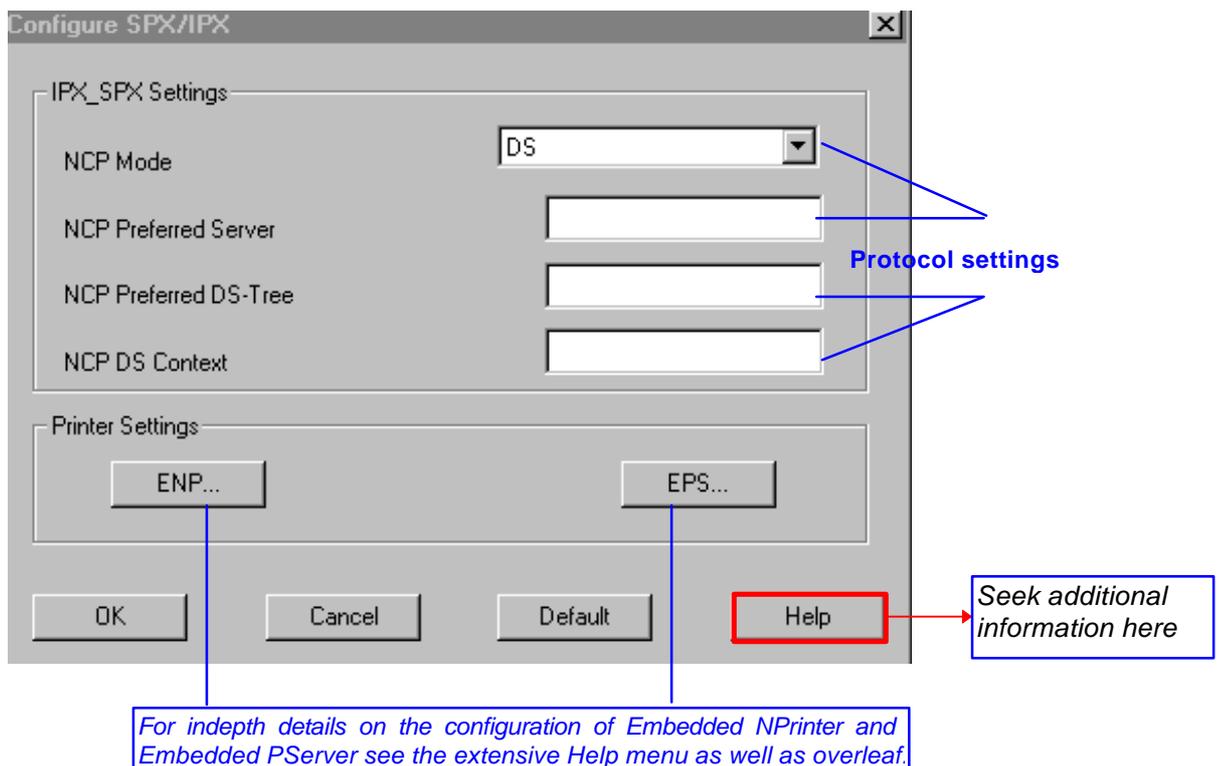
The ENP (Embedded N-Printer) submenu:

Configure ENP (Embedded N-Printer)

ENP 1

ENP Mode   DS

Enp Printer   0

ENP File Server

ENP Print Server

ENP 2

ENP Mode   DS

ENP Printer   1

ENP File Server

ENP Print Server

OK   Cancel   Default   Help

The EPS (Embedded PrintServer) submenu:

Configure IPX/SPX

IPX SPX Settings

Configure EPS (Embedded PrintServer)

EPS Mode   DISABLED

EPS FileServer

EPS PrintServer

EPS Password

OK   Cancel   Default   Help

OK   Cancel   Default   Help

3.3.5.4 Configure PU/LU (SNA)

Enter remote upstream PU MAC address of the host - contact system administrator for details

Seek additional information here

3.3.5.5 Configure NetBEUI/NetBIOS (Windows and OS/2)

NetBEUI means "NetBIOS Extended User Interface".

Enable the Windows NetBEUI protocol from the Main menu to enter/modify the settings for the Windows and OS/2 protocol.

Seek additional information here
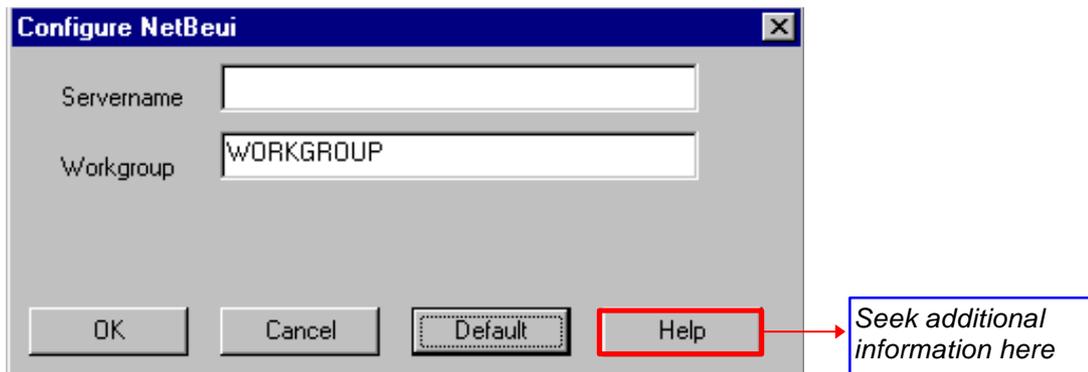
When running the NetBEUI protocol, you should note that only **native data** will be processed. Attempts to generate host print (IPDS or SCS data) will not be processed.

3.3.6 Further Options - The File Menu

☞ Before you move on to the next chapter to learn how to download your recently defined settings (configuration of preferred protocol), let us just sum up briefly:

Using the PSinst32 as the initial configuration tool provides you with the options listed here:

- Configuration of network protocols:
  TCP/IP, **IPX/SPX**- including embedded printer configuration (Novell Netware), **PU/LU** (SNA), **NetBEUI / NetBios**(Windows and OS/2 via SMB printer protocol)
- Network management configuration - SNMP
- Download method (via LAN) - see section 3.3.7

Now follows a description of the operations you are able to perform after you have enabled and configured your protocol(s). So, let us take a look at the "File" menu. The "File" menu i located in the top left corner of the main form.
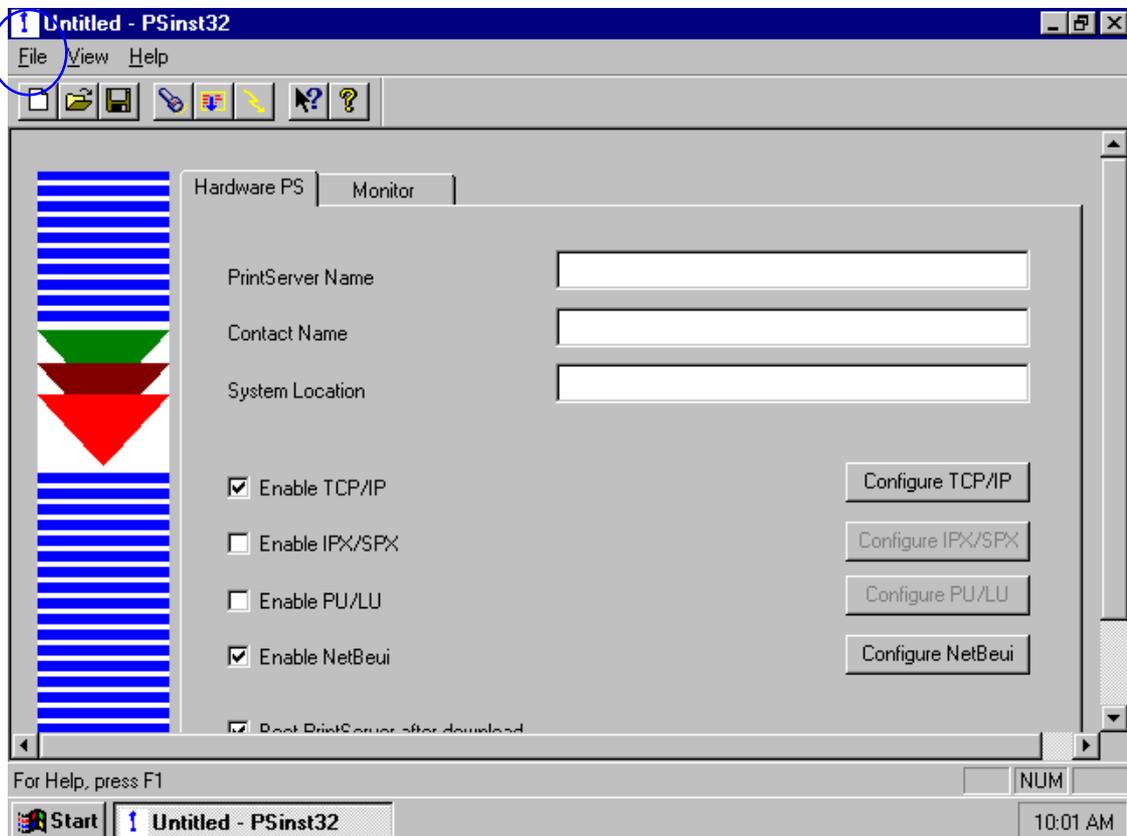
The File menu has the following actions available:

	File View Help
	New Ctrl+N
Open an existing configuration file	Open... Ctrl+O
	Save Ctrl+S
	Save As...
Discover command for new devices on the LAN	Discover...
Refresh status on existing devices (no new devices)	Refresh
Switch among various adapters installed locally	Select Adapter
When downloading............	Download
You need to select a target port for download	Download From...
	Select Download Port...
	1 C:\WINDOWS\Desktop\test1
	Exit

☞ Below you will find guidelines to the various options listed on this menu

"Discover.."

This function will receive replies from **all** devices attached to the LAN
The Discover command is also available via the toolbar - look for the icon with the flashlight on it. When you have selected LAN as the download method (see below), the discovery function will receive a reply from the device without any prior configuration.

> **NOTE:**
> **The discover function puts a heavy burden on network traffic - so use it with care.**

"Refresh"

The Refresh command performs a sequential query for all the existing devices on the LAN - i.e. will not see **new** devices. Allow some time for this process to finish.

> **NOTE:**
> **Rather use the Refresh command than the discover operation, to ensure low network traffic if you only need to refresh the device status**

"Select Adaptor.."

Allows you to switch between different locally installed adaptors.

"Download.."

Allows you to download a file to the PrintServer

"Select Download Port.."

In order to download a configured file, you will have to select a target port.

The PSinst32 leaves you with two options:

- Download via Parallel port (not supported by this product)
- Download via LAN (select DLC - **NOTE**: Check installation)
  When using LAN as download method, you will be presented with a
  dialog containing a list of discovered devices. The devices are
  discovered by MAC address. See the "Broadcasting" section 3.3.9.

Select Download Port

Choose Port
- LPT1
- LPT2
- LPT3
- DLC

[OK] [Cancel] [Help]
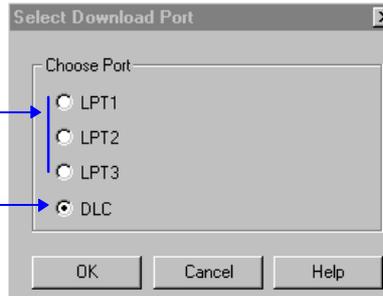
3.3.7 End of Configuration - Downloading Settings to the PrintServer

When you have completed the configuration of the selected protocol environment(s), you must download the new settings to the selected target port. This download target port must be via **the LAN**

"Select DLC download port"
Choose the "Select Download Port" option from the "File" menu in the top left corner of the screen. The following form will be displayed:

- Download via LAN - select DLC (**NOTE**: Check installation)
   When using LAN as download method, you will be presented with a dialog containing a list of discovered devices. The devices are discovered by MAC address. See the "Broadcasting" section 3.3.9.
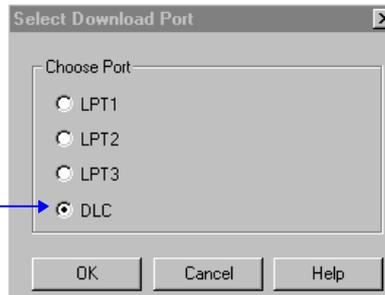
Next, select the menu "Download" in the "File" menu which you will find in the top left corner of your main menu.
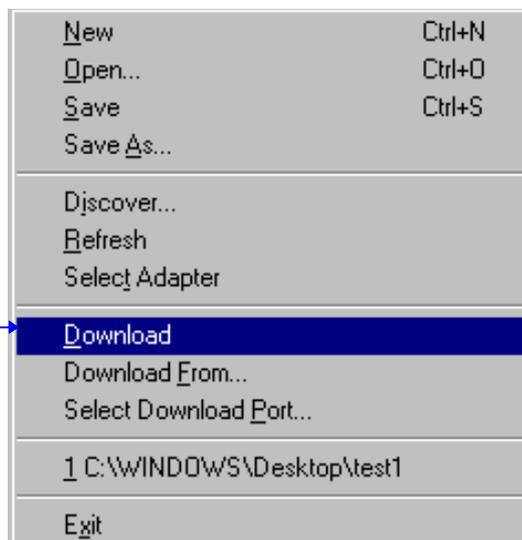
Now the Monitor form will appear listing all available devices on the network.

NOTE:
If the Monitor form *does not appear by itself*, click the Monitor form and select the "Discover" function to contact your device. The "Discover" function will perform a broadcast on your network contacting and subsequently listing all available devices. You can activate the "Discover" function from the "File" menu (see illustration above) or by clicking this icon:

When your device is listed in the Monitor form, highlight the device and click "OK" to download your new settings to it.

Boot PrintServer after download
You will find this option in the main menu "Hardware PS" Form.
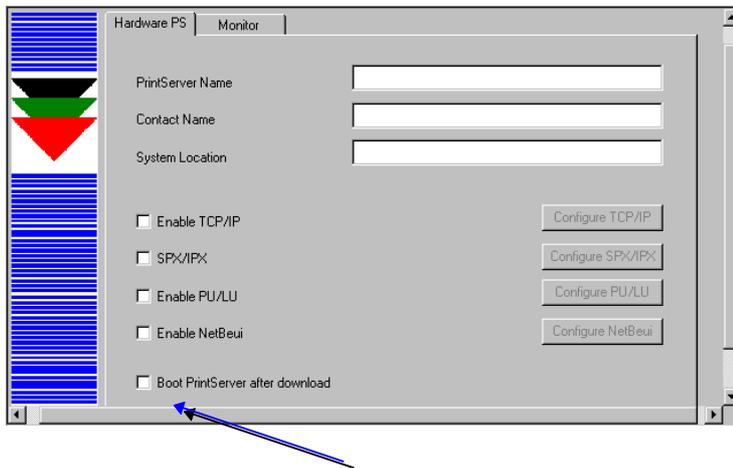
If the new settings you have just downloaded *differ* from the current settings - *and* no error situations have occured - , the PrintServer will immediately be booted when ticking the field " ***Boot PrintServer...........***" . The display of warning messages does not prevent the PrintServer from being booted.

3.3.8 Firmware download

It is possible to download firmware via PSinst32 by activating the menu "Download From.." from the "File" menu. When activated you will see this screen:
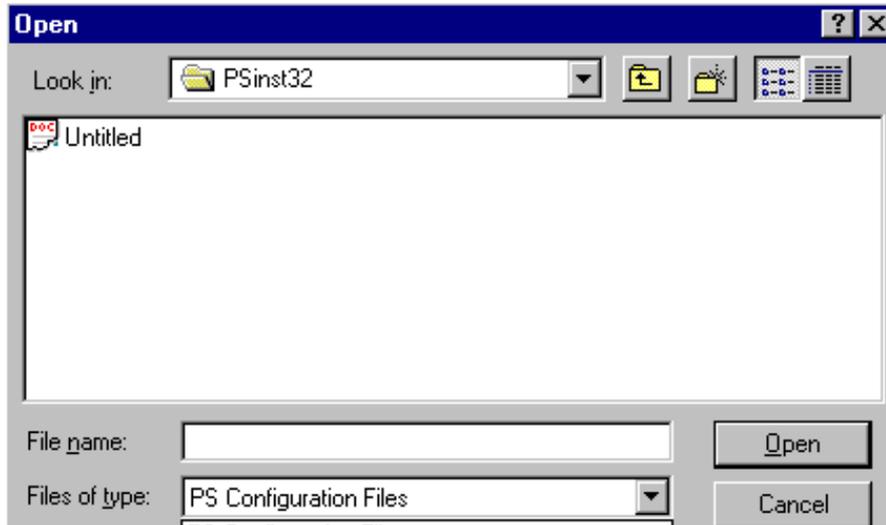
As a default PSinst32 will promt for download of PrintServer configuration files but other files can be downloaded clicking "Files of type":

- PS Configuration Files
- MakeITDS Configuration Files
- IPDS Top Firmware
- FSL Top Firmware
- IPDS Fontset
- Base Code
- All files

In the following you will see how to download firmware in the shape of PrintServer drivers when the PrintServer is equipped with a top module for IBM 3270 or IBM 5250 environment printing.

Example of downloading firmware for PrintServer drivers

When the PrintServer is equipped with a top module for printing in IBM 3270 or 5250 environments, the driver can be downloaded as follows:

1. In the above form click "Files of Type"

2. Select "FSL Top Firmware"

3. On the screen you will see a number of drivers.

PCL/SCS	(Mainframe)	← 🔲 14C01005.f12	🔲 14300004.f12 → 170/SCS	(Mainframe)
PCL/DCA	(AS/400)	← 🔲 14C02002.f22		
3270 /SCS	(Mainframe)	← 🔲 14101001.f12		
XES/DCA	(AS/400)	← 🔲 14200206.f22		
XES/SCS	(Mainframe)	← 🔲 14200209.f12		
150/SCS	(AS/400)	← 🔲 14300002.f22		
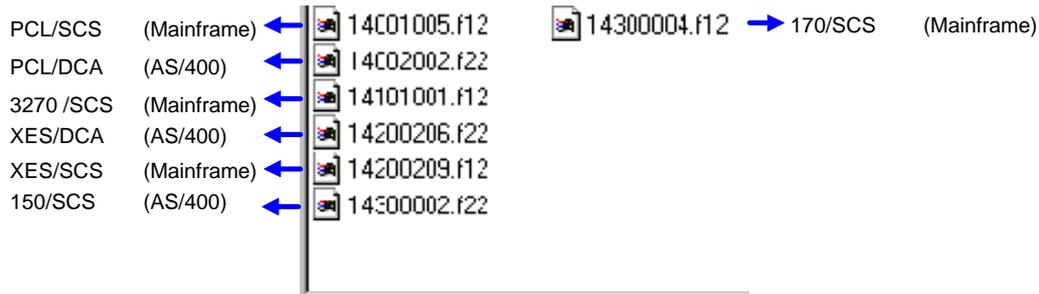
4. Highlight the driver you wish to use and click " **Open**".

5. Now the Monitor Form screen with the attached device s will appear. In this menu, you highlight the device to where you wish to download the PrintServer driver.

6. When selected, click " **OK**" and the firmware is downloaded to the device.

3.3.9 Broadcasting

One of the strong features of PSinst32 is the ability to detect and configure devices via the LAN. When the DLC port has been selected as download port, it is possible to detect devices even before an IP address has been associated. This kind of detection is called *broadcasting*. A broadcast message is issued through all bridges on the LAN. All associated devices will be able to recognize this message, and will return an identification message. The monitor sheet displays all devices which respond to the broadcast message.

> **NOTE:**
> **Since broadcasting puts a heavy burden on the network, it should be limited to a minimum.**
> **If you only need to update the status of the devices attached to the LAN, you are recommended to use the "Refresh" command instead of the "Discover" to lower network burden.**
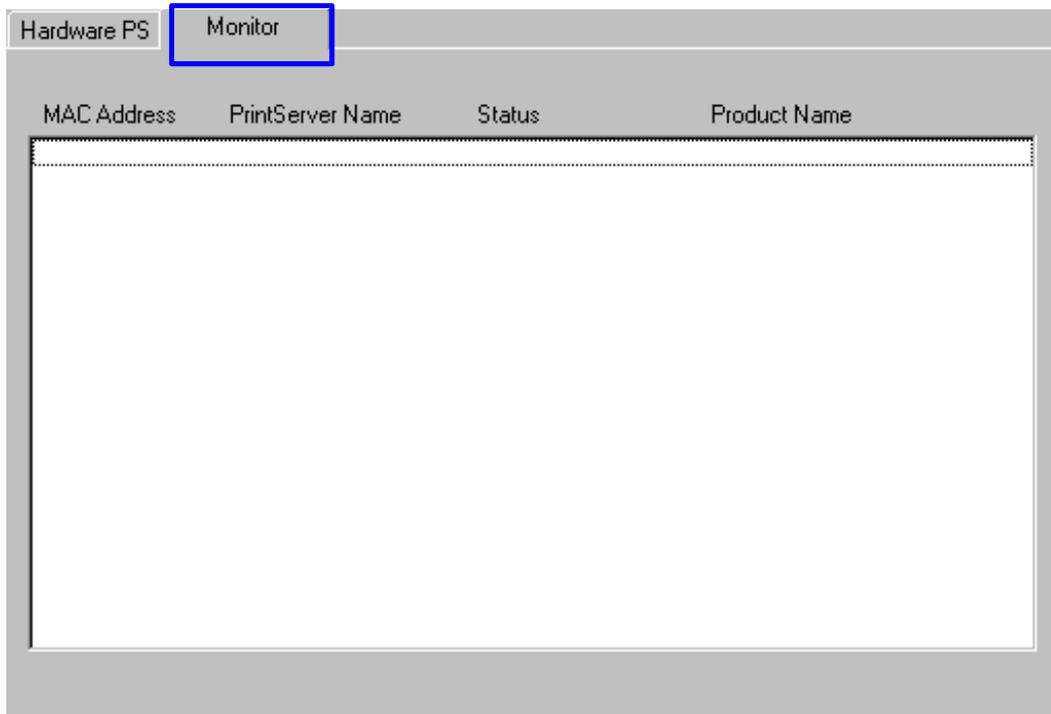
The Monitor menu screen consists of the following information fields:

- *MAC address:*
  This is the MAC address of the device. When activating the discover (or Refresh) command, the device will sort the devices according to MAC address and Name. New configured devices will be displayed at the top.
- *Name:*
  This is the name (*if any*) the user has attached to the PrintServer
- *Status:*
  The status menu will show the present status of the output ports on the device. For detailed status information, double-click on a specific device.

3.4 Configuration using Web Browser

With a standard Web Browser, the *PrintServer*
supports configuration and status tasks. This
section provides an outline description of the
settings to be performed using the Web browser.

3.4.1 Requirements

A standard Web browser with Frame support.
If you use a no-frame browser (e.g. Microsoft Explorer), certain functions
will not be supported.

3.4.2 Access to ida HTML configuration

A configuration session requires the log on to the *PrintServer* entering
your IP address.

At the URL prompt type:

Open URL

Enter the URL:

http:// *< PrintServer IP address >*

☐ Reload from Internet server

[OK]   [Cancel]

3.4.2.1 IP address

The IP address may be defined using one of these configuration tools:
- PSinst32
- Setup file
- BOOTP
- Via the Front Panel

These configuration methods are described elsewhere in this manual. For
details on the IP address, you are to consult your system manager.

When you have executed the URL command, you will be presented with
the following *PrintServer* HTML configuration panel:
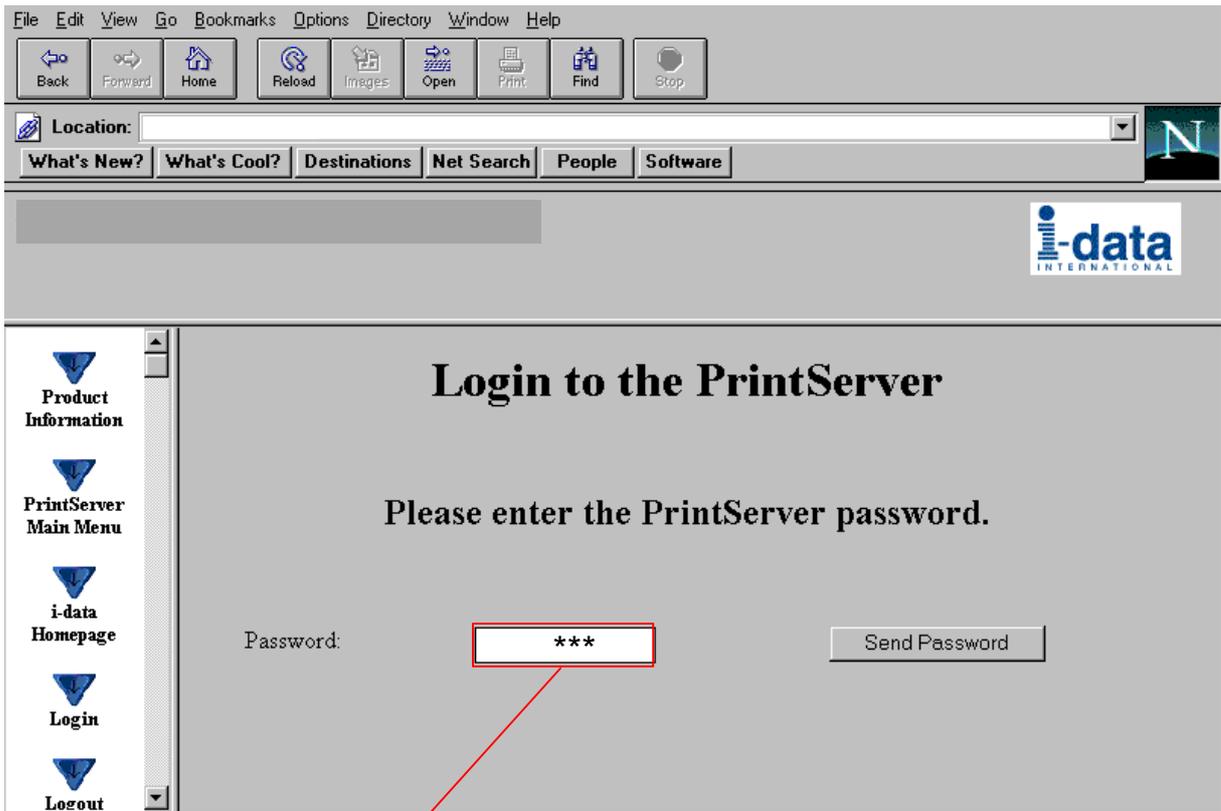
3.4.2.2 Password

You will now be prompted for a password. From the factory, the password is "**adm**".

Once the <PRINTSERVER> has accepted the default password, you are ready to make the desired configuration / view status on your PrintServer.

NOTE:
- You are recommended to change this password. See the menu "**Change Password**" for details.

- All settings must be confirmed using the menu "**Save Configuration**" to become effective.

3.4.3 Overview

Product Information → This contains an outline description of the PrintServer and other printing options.

PrintServer Main Menu → Click this to enter the main configuration menu - see below for details.

i-data Homepage → If you are connected to the Internet, you will get direct access to the i-data Homepage clicking this button.

Login → Should the session time out, you can re-establish activating this button.

Logout → When you have made the necessary settings, you terminate the session via this menu.

3.4.4 Configuration chart

This is a chart of the configuration and status options supported with the *PrintServer*

PrintServer Main Menu →

Configure PrintServer
- Configure General Parameters
- Configure PrintServer Parameters
- Configure TCP/IP
- Configure IPX/SPX
- Configure ida 802.2
- Configure PU/LU
- Configure NetBios
- Save Configuration
- Restore Configuration
- Restore Factory Def.
- Change Password
- Reboot PrintServer

Status PrintServer
- Status LAN Interface
- Status TCP/IP Protocol
- Status IPX/SPX Protocol
- Status PU/LU Protocol
- Status SNMP Agent
- Status Printer
- Error Log

3.4.5 Main Menu

When you click the Main Menu, you will be presented with the two main tasks in the PrintServer HTML configuration program:
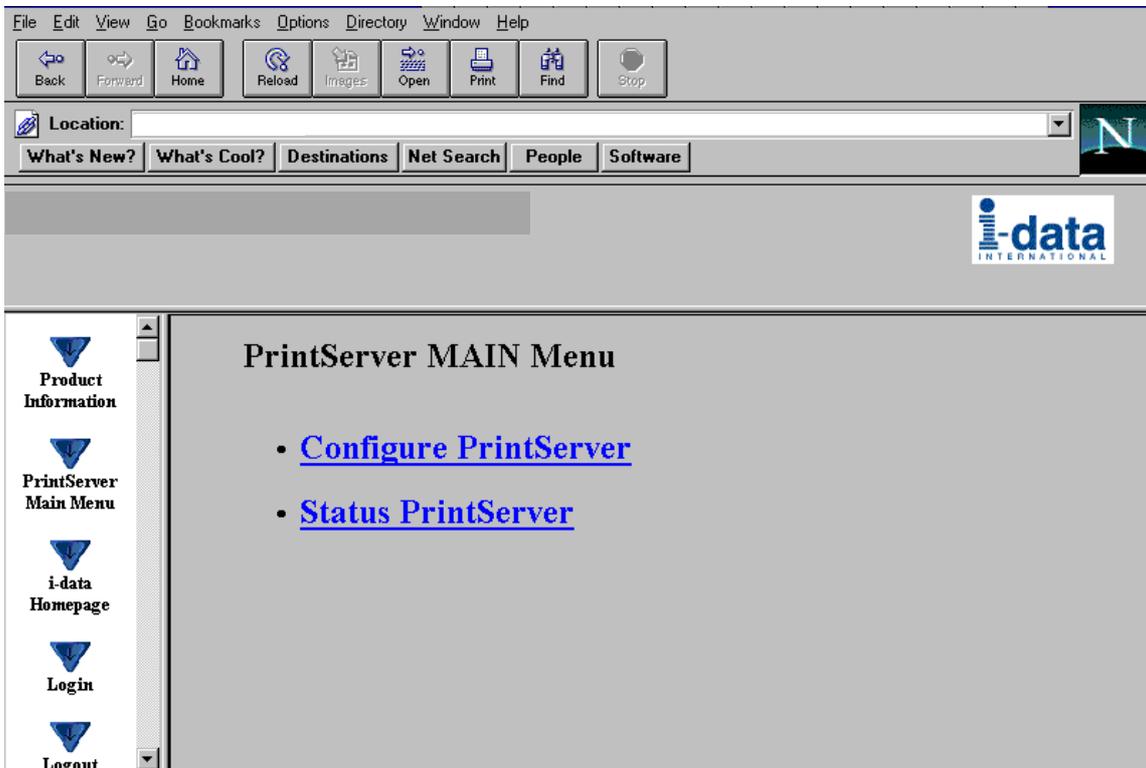
3.4.6 Configure PrintServer
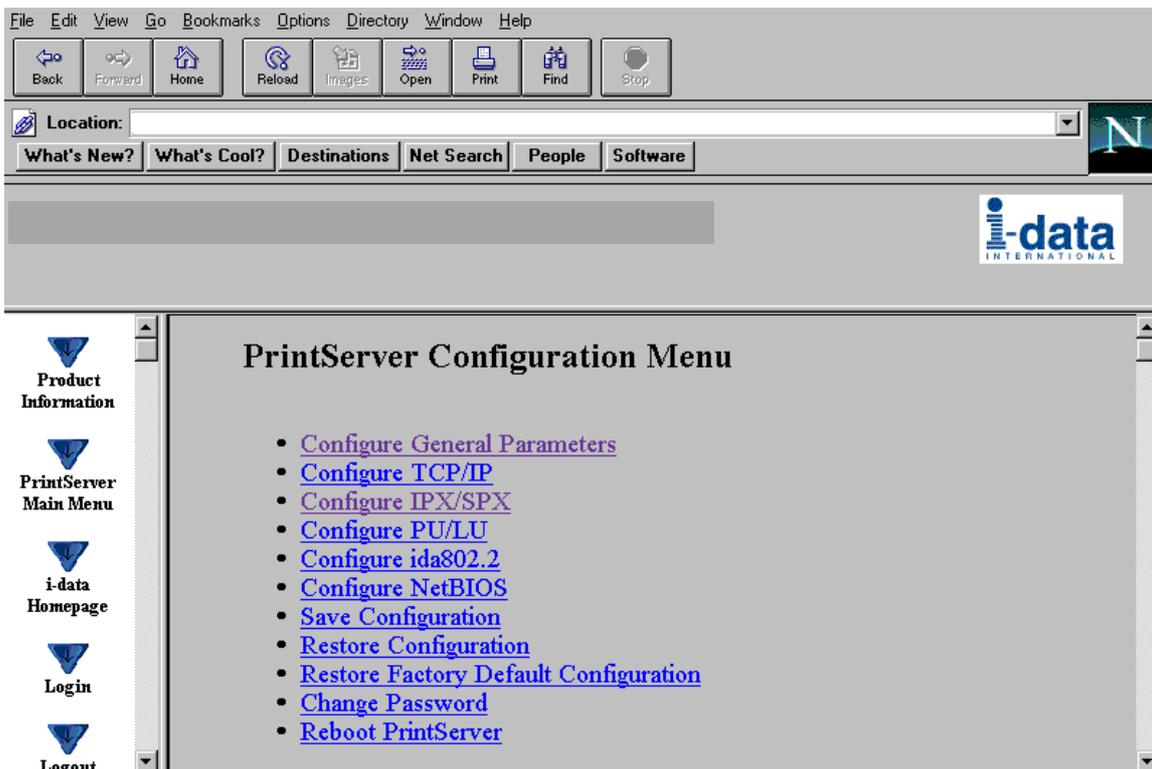
When you have made all the necessary configurations via this entry menu, click the menu at the very bottom to the right - *Previous Menu* (not visible on this screen).

> **Remember to save via "Save Configuration" for the changes to become effective**

3.4.7 PrintServer Status Menu
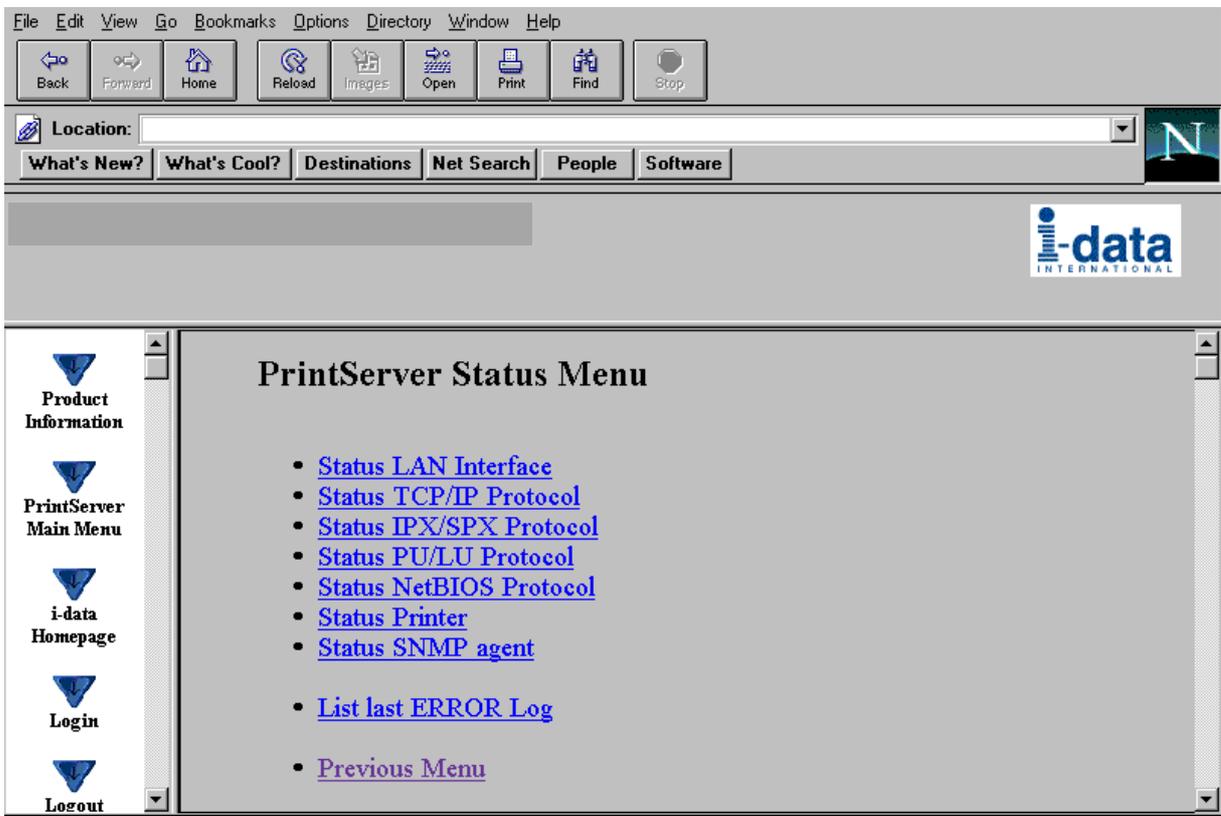
The status menus provide you with various product information depending on which panel you select.
You can update the information by clicking the menu " **Refresh**".

NOTE: Some browsers (no-Frame) do not support the Refresh function.

3.5 Configuration using Telnet

The Telnet support (Terminal Emulation Protocol) offers yet another way of configuring and monitoring the *PrintServer.* For this you will need the emulations VT 100 and NVT. Telnet is a standard TCP/IP application permitting access from TCP/IP attached host systems.
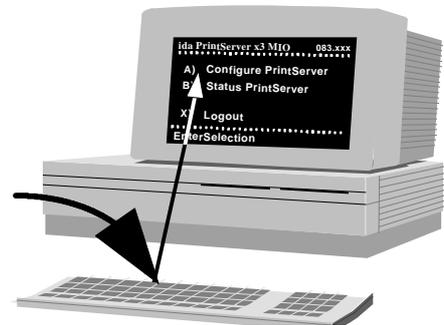
NOTE:

As Telnet requires NVT and VT100 terminal emulations, Telnet configuration support is not valid when running VM and MVS.

Due to restrictions in the AS/400 Telnet implementation, the following information should be considered:

"If you do not want the characters that are being typed to be displayed, the function key associated with the "Hide" function should be pressed (F6 on the default keyboard map). This function should be used when typing a password.

If you want the characters that have been typed to be sent to the remote system for processing without pressing the Enter key, you should press the function key associated with the "SENDWOCR" function (F11 on the default keyboard map)."

(source: IBM: Network in Red Books, SK 2T-6022).

To establish a Telnet session with a *PrintServer* interface you need to program the *PrintServer* with an IP address. This address may also be configured via one of the many other configuration methods available (as described in this chapter).

EXAMPLE

To start a Telnet session on a Telnet capable host, type the following:

Telnet 192.0.110.1.

where

192.0.110.1. is the IP address of the *PrintServer.*

(*For IP address details contact your system administrator*)

When a Telnet session has been established, the *PrintServer* will prompt the host for a *userid* and *password.*

The userid will be **adm** and the password will initially be defined as **adm** You are recommended to change this initial password. To change the default password, see section 3.5.5 .

Once the *PrintServer* has accepted the default password, the following screen will appear. For details on the main menu, see section 3.5.1

```
<PrintServer>         Main Menu          0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - -
         A)      Configure PrintServer
         B)      Status PrintServer

         X)      Logout

- - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

Navigation keys

When configuring using the Telnet, the following navigation keys will be used:

Selecting **menu fields**	Key value (e.g. type **A**)
Toggling between **entry options**	Space bar
Selecting a given value	ENTER key
Return to previous level/exit	X

Other menu keys will be ignored for navigation purposes.

Validation will be performed in the various Telnet menus to make sure that only valid field updates are performed. An error message will appear if an entry is made incorrectly.

> **Important:**
>
> **The new settings will only take effect when you select the men "Save Configuration" and then "Reboot PrintServer".**

3.5.1 Menu Structure

This section provides an *outline* description of how to configure and monitor the *PrintServer* using Telnet.

Main Menu

```
<PrintServer>       Main Menu                  0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -


         A)      Configure PrintServer          section 3.5.2


         B)      Status PrintServer             section 3.5.11




         X)      Logout

- - - - - - - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

If you wish to configure the *PrintServer*, type **A** at the selection prompt.

3.5.2 Configuring PrintServer

Configure PrintServer - Submenu

```
<PrintServer>       Configuration Menu            0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

         A)      Configure General Parameters   section 3.5.3
         B)      Configure Sessions             section 3.5.4

         C)      Save Configuration             section 3.5.6
         D)      Restore Configuration          section 3.5.7
         E)      Restore Factory defaults       section 3.5.8.

         F)      Change Password                section 3.5.5
         R)      Reboot PrintServer             section 3.5.9.
         T)      Trace Destination              section 3.5.10.

         X)      Return to previous menu

- - - - - - - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

3.5.3 General Parameters Menu

Type **A** to enter the submenu for further configuration of the *PrintServer*.

```
<PrintServer>      Configure PrintServer      0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

         A)    Configure PrintServer Parameters

         B)    Configure TCP/IP
         C)    Configure IPX/SPX          NOTE:
         D)    Configure ida 802.2        Remember to
         E)    Configure PU/LU            enable the protocol first.
         F)    ConfigureNetBios           Press A.


         F)    Configure SNMP


         X)    Return to previous menu
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

PrintServer Configuration

```
<PrintServer>      Configure PrintServer      0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

A) PS Name
B) Location
C) ContactPerson

D) Local MAC address...........:    E) Early Token Release.........:
F) MAC address enabled.......:      G) Broadcast Type

H) TCP/IP enabled...................:    I) IPX/SPX enabled................:
J) PU/LU enabled...................:      K) NetBeui enabled...............:

L) Share Timeout..................:
M) IRQ Timeout.....................:
N) Hold Timeout.....................:

O) BOOT enabled...................:



X)   Save and Return          Z)   Return without saving
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Enter Selection
```

Enter Selection

To make an entry for the local MAC address, type A. This will place you in the prompt for the local MAC address. If the entry is incorrect, you will receive an error message.

To return to the "Enter Selection" prompt, press Enter.

For action fields other than text entries (e.g. MAC Address) use the space bar to toggle the entry options.

TCP/IP Configuration

→ *Remember to set "TCP/IP enabled" to* **YES**.

```
<PrintServer>        Configure TCP/IP            0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

      A)     HostName...........................:  ←  You may use this entry field to
                                                      write specific information on e.g.
      B)     Use BOOTP Server...............:        target printer:
                                                      NET1stFloor or John Doe's lpt.
      C)     TCP MSS..............................:   A maximum of 15 characters is
                                                      recommended for host  name
      D)     TCP Window.........................:

      E)     Default IP address...............:

      F)     Default SubNet Mask..........:

      G)     Default Gateway Address...:

      H)     Microcode Filename.........:



   X)  Save and Return           Z)   Return without saving
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

IPX/SPX Configuration

→ *Remember to set "IPX/SPX enabled" to* **YES**.

Use the space bar to toggle through the options

```
<PrintServer>      Configure IPX/SPX        0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
Frames:1)802.2:YES  2) SNAP: YES

        A)      NCP mode........................:
        B)      NCP preferred Server......:
        C)      NCP preferred DStree.....:
        D)      NCP DSname context.....:

        E)      EPS mode........................:
        F)      EPS PrintServer.............:
        G)      EPS FileServer................:
        H)      EPS Bindery Poll Tim.....:
        I)      EPS Password.................:


  X)  Save and Return          Z)   Return without saving
- - - - - - - - - - - - - - - - - - - - - - - - - - -
EnterSelection
```

NOTES:

Bindery Poll Time
If version 4.x (DS) is selected as NCP mode, the entry "Bindery Poll Time" will NOT appear in the *test printout*. It will, however, be maintained as an entry in Telnet, regardless of NCP mode.

EPS Password
This password must be a match of the NetWare PServer password.

When printing you should check the connection to the PServer viewing the NetWare menu "Active Connections".

ida 802.2 Configuration

```
<PrintServer>      Configure ida 802.2        0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

        A)      Alias Name....................:

  X) Save and Return      Z) Return without saving

- - - - - - - - - - - - - - - - - - - - - - - - - - -
Enter Selection:
```

PU/LU Configuration

⟶ *Remember to set "PU/LU enabled" to **YES**.*

```
<PrintServer>      Configure PU/LU              0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

        A)     Blocknumber.................: 05D
        B)     ID number.......................: 00000
        C)     Remote MAC address...:  ─────────────────▶   Upstream PU
        D)     Local SAP.....................:                MAC address
        E)     Remote SAP..................: 04


   X) Save and Return       Z) Return without saving

- - - - - - - - - - - - - - - - - - - - - - - - - - - -
Enter Selection:
```
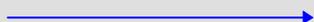
NetBios Configuration

⟶ *Remember to set "NetBeui enabled" to **YES**.*

```
<PrintServer>      Configure NetBios            0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

        A)     Servername.................:
        B)     Work Group.................: WORKGROUP


   X) Save and Return       Z) Return without saving
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
Enter Selection:
```

SNMP Configuration

```
<PrintServer>        Configure SNMP agent              0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


SNMP Trap Destinations    Authentication Traps:


No.  Index  Community Name   IP Address
-
-
-



SNMP Manager Access Authorization


No.  Index Community Name  Access  Network Address  Mask
-
-
-


- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
A) Add  D) Delete  C) Change AuthTrap  X) Return  Enter Action
```

For adding an SNMP Trap parameter or configuring the access
parameters press **A** for ADD.

You can now select between T)rap or A)uthorize parameters.

Selecting Trap will present the following screen:

```
<PrintServer>       Configure SNMPTrap Parameters   0xx.xxx

   A) Destination IP Address ................................:

   B) Destination Community Name......................:



   X) Save and Return
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   Enter Selection
```

Selecting Authorize will present the following screen:

```
<PrintServer>      Configure SNMPAccess Parameters 0xx.xxx

  A) Community Name......................................:

  B) Manager IP Address.................................:

  C) IP Address Mask........................................:

  D) Manager Access Type......................____...:


  X) Save and Return

  Enter Selection
```

3.5.4 Configure Sessions

In the sub-menu for the "Configure PrintServer", select "Configure Sessions" typing **B** at the selection prompts. You will see the following screen:

"+" Means that Trace has been activated

Means session is active`

```
<PrintServer>              Configure sessions          0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
No.       Enabled        Session Description
 1        YES*           +PPD 5001 --> IPDS DATA --> PRINTER
 2        YES*           +PPD 5002 --> IPDS DATA --> PRINTER
 3        YES*           +LPD q: LPDPRT1        --> PRINTER
 4        YES*           +LPD q: LPDPRT1ACR    --> PRINTER
 5        YES*           +ENP PNO:0             -->PRINTER
 6        YES*           +SNA Print  --> SCS data   --> PRINTER
 7        ____           _____
 8        ____           _____
 9        ____           _____
10        ____           _____
11        ____           _____
12        ____           _____
13        ____           _____
14        ____           _____

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
T) Trace U) Untrace S) Status D) Delete E) Edit X) Return Enter action:
```

To edit a specific sub-menu, type E (Edit) and the required parameter to modify and then press <ENTER>.

3.5.5 Change Password

In the sub-menu for the "Configure PrintServer" select "Change Password" by typing **F** at the selection prompts.

You are now prompted for the old password.

```
<PrintServer>      Change Password              0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

      Old Password:            ******

- - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

When entered, you will be prompted for a new password.
Finally, the new password must be re-entered to be confirmed by the system.

NOTE:
Only the password for the current session can be changed.
If an invalid password is entered, the previous menu level
is displayed.

3.5.6 Save Configuration

> **NOTE**:
> **When you have made new settings or changed existing, you must**
> **save the settings with this menu. Then reboot the printserver (see**
> **section "Reboot PrintServer below). If you fail to do this the**
> **new/modified settings will be lost when the printer is turned off.**

In the sub-menu for the "Configure PrintServer" select "Save
Configuration" by typing **C** at the selection prompts. You will see the
following screen:

```
<PrintServer>        Save Settings              0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -

    Saving current settings will overwrite default settings.
    Enter "YES" to Save or "NO" to return without saving.


    Save current Settings to Flash?
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

3.5.7 Restore Configuration

In the sub-menu for the "Configure PrintServer" select "Restore
Configuration" by typing **D** at the selection prompts. Follow the
instructions on the screen.

3.5.8 Restore Factory Default

In the sub-menu for the "Configure PrintServer" select "Restore Factory
Default" by typing **E** at the selection prompts. Follow the instructions on
the screen.

3.5.9 Reboot PrintServer

In the sub-menu for the "Configure PrintServer" select "Reboot PrintServer" by typing **R** at the selection prompts. Follow the instructions on the screen.

3.5.10 Trace destination

Type T at the selection prompt to enable the trace facility.

```
<PrintServer>        Trace destination parameters        0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


         A)      FTP Host Name..............:
         B)      User Name.....................:
         C)      Password........................:
         D)      File Name........................:

                         S)      Start Trace
                         T)      Stop Trace
                         X)      Return
                                              not tracing !
```
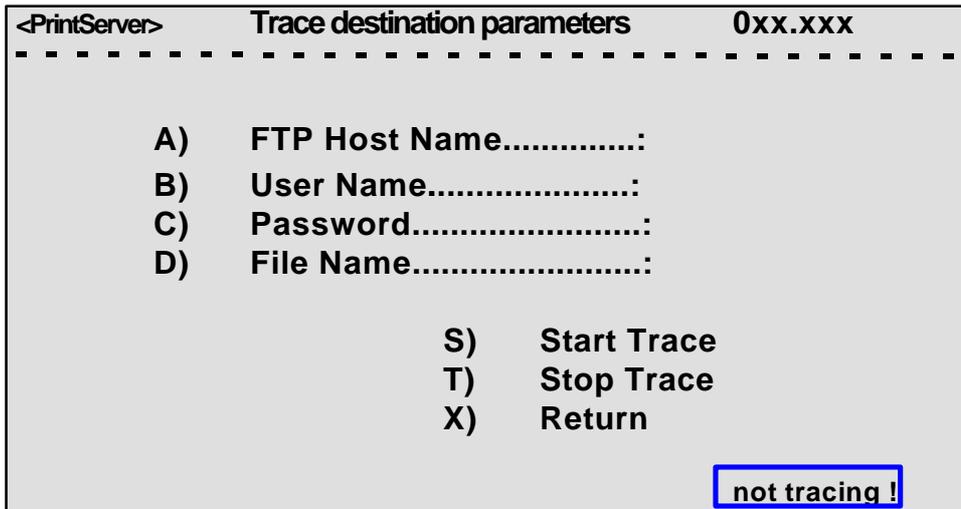
indicates the trace status

Type e.g. **A** (FTP Host Name) to be prompted for making entries to the trace destination parameters.

Press Enter when you have made your entries.

> **NOTE:**
> **By default all sessions have trace enabled**

3.5.11 Status PrintServer

From the *main menu* select the menu "Status PrintServer" by typing **B** at the selection prompt. This will lead to the following screen.

```
<PrintServer>      Status Menu              0xx.xxx
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -


        A)      Status LAN interface
        B)      Status TCP/IP
        C)      Status IPX/SPX
        D)      Status PU/LU
        E)      Status NetBios
        F)      Status Printer

        G)      Status SNMP Agent

        L)      List Last Error Log


        X)      Return to previous menu
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Enter Selection:
```

Enter a selection to view the current status.

3.6 Configuration using Setup File

Only modify or change the settings via the configuration file if strictly necessary.
Otherwise, you are recommended to use one of the other configuration tools (see above)

The sample configuration files supplied with the *PrintServer* may be used to configure or re-configure the product. The files may be sent directly via the LAN. The protocols used may be programmed in the *PrintServer*.

Setup File Identifier

The configuration file must be started with the following string:

&&??##N1,0#

and be terminated with this string.

&&??<space>

These strings are used for identifying the setup file when being downloaded. ***They must not in any way be altered***.

You are recommended to stop all printer sessions before the downloading of (new) configuration settings as active print sessions may be interrupted.

Default settings for the *PrintServer* are supplied with each unit.

3.6.1 Sample minimum configuration file

```
&&??##N1,0#      : Start of file - Don't remove this!

Short configuration for a PrintServer
(This is an example. Please modify the parameters to match your configuration).

00XXX00X
```

```
 **************************************************************************
                                 IDAPS
 **************************************************************************
BEGIN_CONFIGURATION       IDAPS
  ENABLE_TCPIP             YES            ; ENABLE TCP/IP protocol
  ENABLE_802_2             YES            ; ENABLE 802.2 protocol
  ENABLE_NETWARE           NO             ; ENABLE Netware protocol
  ENABLE_PU_LU             NO             ; DISABLE PU/LU protocol
  ENABLE_NETBEUI           YES            ; ENABLE NetBEUI protocol
  BOOT                     YES            ; Reboot PS if conf.has changed


 **************************************************************************
                                 TCPIP
 **************************************************************************
BEGIN_CONFIGURATION TCPIP
  BOOT                     YES            ; BOOT from BOOTP server
  DEFAULT_IP               192.0.0.1      ; IP addr. if not booted by BOOTP
  DEFAULT_SM               255.255.255.0; Subnet Mask if not booted by BOOTP
  DEFAULT_GW               192.0.0.0      ; Gateway addr. if not booted by BOOTP
END
;**************************************************************************
                                 P U
;**************************************************************************
BEGIN_CONFIGURATION PU
; BLOCKNUMBER             05D             ; Fill in your Block number
; IDNUMBER                00000           ; Fill in your ID number
; REMOTE_MAC              400000000000    ; Fill in HOST / GW  MAC address.
END
 ;**************************************************************************
                                 NETWARE
 ;**************************************************************************
BEGIN_CONFIGURATION NETWARE
  LSL_FRAME_802_2          YES            ; Use 802.2 protocol
  LSL_FRAME_802_SNAP       NO             ; Disable SNAP protocol
  NCP_MODE                 DS             ; BINDERY or DS, match server
  NCP_PREFERRED_SERVER     XXXXXXXXX      ; Name of fileserver
  NCP_PREFERRED_DSTREE     XXXXXXXXX      ; NetWare 4.x only
  NCP_DSNAME_CONTEXT       XXXXXXXXX      ; NetWare 4.x only
 **************************************************************************
                                 802.2
 **************************************************************************
BEGIN_CONFIGURATION 802_2
  ALIASNAME                XXXXXXXXX      ; Shown in the idaPMUTL window
 **************************************************************************
                                 IDA802_2 ID 1
 **************************************************************************
BEGIN_CONFIGURATION 802_2 1
  INSTREAM_802_2           NATIVE         ; Transparent print
 **************************************************************************
                                 ENP ID 1
 **************************************************************************
BEGIN_CONFIGURATION ENP 1
  PRINTERNUMBER            XXXXXXXXX      ; Capture printer 0 on Novell server
  FILESERVER               XXXXXXXXX      ; Name of fileserver
  PRINTSERVER              XXXXXXXXX      ; Name of printserver
  MODE                     XXXXXXXXX      ; BINDERY or DS, match server
```

```
     **********************************************************************
                                 ENP ID 2
     **********************************************************************
BEGIN_CONFIGURATION ENP 2
  PRINTERNUMBER              XXXXXXXXX    ; Capture printer 1 on Novell server
  FILESERVER                XXXXXXXXX    ; Name of fileserver
  PRINTSERVER               XXXXXXXXX    ; Name of printserver
  MODE                      XXXXXXXXX    ; BINDERY or DS, match server


     **********************************************************************
                                 NETBIOS
     **********************************************************************
BEGIN_CONFIGURATION NETBIOS
  SERVE_NAME                XXXXXXXXX    ; NetBIOS server name
  WORKGROUP                 WORKGROUP    ; Workgroup for the PrintServer
END

  &&??
```

3.6.2 Advanced configuration

In this section you will find examples of how to configure the various setup file parameters. The purpose of these examples is to provide you with simple guidelines for configuration using the setup file.

The chart below provides an overview of the various configuration options.

```
                        ┌─────────────────────┐
                        │  GROUP PARAMETERS   │
                        └─────────────────────┘
       ┌──────────┬───────────┬───────────┬───────────┐
  ┌─────────┐ ┌────────┐ ┌──────────┐ ┌─────────┐ ┌────────┐
  │ PU/LU   │ │ TCP/IP │ │ NetBios/ │ │ NETWARE │ │  IDA   │
  │         │ │        │ │ NetBeui  │ │         │ │ 802.2  │
  └─────────┘ └────────┘ └──────────┘ └─────────┘ └────────┘
      │       ┌───┴────┐                   │           │
  ┌───────┐ ┌─────┐ ┌─────┐           ┌─────────┐ ┌────────┐
  │  SNA  │ │ LPD │ │ PPD │           │   ENP   │ │ 802.2  │
  └───────┘ └─────┘ └─────┘           └─────────┘ └────────┘
   ┌──┴───┐          ┌──┴───┐
 ┌──────┐ ┌─────┐  ┌──────┐ ┌──────┐
 │ IPDS │ │ SCS │  │ ICDS │ │ IPDS │
 └──────┘ └─────┘  └──────┘ └──────┘
             │
          ┌─────┐
          │ SCS │
          └─────┘
  ┌────────────────────────────────────────────────────┐
  │                      PRINTER                        │
  └────────────────────────────────────────────────────┘
```
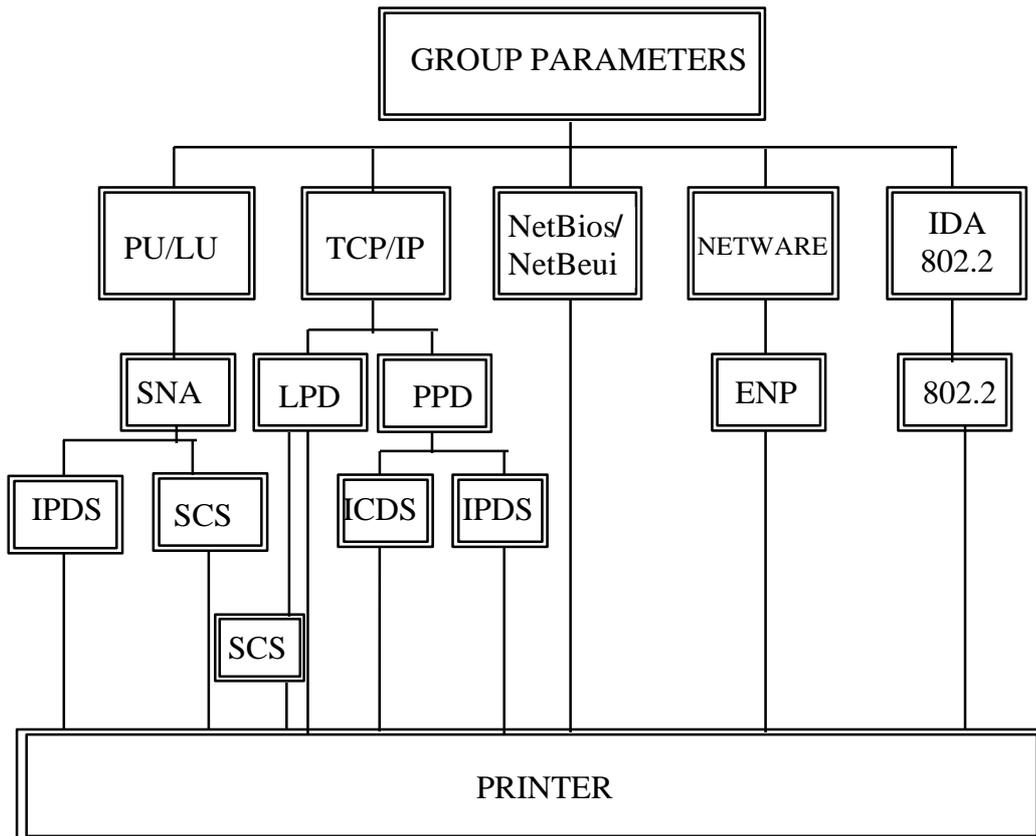
Enabling IDAPS

Here the following group parameters are enabled / disabled.

If a group parameter is following the setup definitions for the various sessions, e.g. IPDS input for a session, these must be configured. See the following sections.

```
BEGIN_CONFIGURATION IDAPS
   LOCAL_MAC                4XXXXXXXXXXXX
   SEL_MAC                  UNIVERSAL
   EARLY_TOKEN              NO
   ENABLE_TCPIP             YES
   ENABLE_NETWARE           NO
   ENABLE_802_2             YES
   ENABLE_NETBIOS           YES
   ENABLE_PU_LU             NO
   BOOT                     YES
   SHARETIMEOUT             20
   HOLDTIMEOUT              600
   IRQTIMEOUT               60
END
```

Defining PU_LU

NOTE: The PU_LU session requires the installation of an FSL or IPDS add-on module.

To enable a PU_LU session (SNA), the following keywords are used. The keywords must match the values configured in the chapter "SCS Printing Using SNA".

```
BEGIN_CONFIGURATION PU
   BLOCKNUMBER      05D
   IDNUMBER         0     (set exchange ID number)
   REMOTE_MAC       000   (set the MAC address of the upstream device)
   LOCAL_SAP        4
   REMOTE_SAP       4
END
```

Define SNA

To define a SNA session, see the following configuration example:

```
BEGIN_CONFIGURATION SNA_PRINT        3
   INSTREAM_SNA_PRINT                SCS
END
```

Define TCP/IP

To select and define TCP/IP session see the following sample configuration. The details on configuration parameters are available in Appendix A.

NOTE:
The values to be configured must match your environment.

```
BEGIN_CONFIGURATION TCPIP
   BOOTP                 YES
   TCP_MSS               1400
   TCP_WINDOW            4200
   DEFAULT_IP            ?????
   DEFAULT_SM            ?????
   DEFAULT_GW            ??????
END
```

Printing LPD

To select and define an LPD session see the following sample configuration.

```
BEGIN_CONFIGURATION LPD x
   LPD_QUEUE                           "LPDPRT1"
   LPD_AUTOCR                          NO
END
```

Define PPD

To select and define a PPD session see the following sample configuration. The details on configuration parameters are available in Appendix A.

NOTE:
The port values to be configured must match the values defined on the relevant host.

```
BEGIN_CONFIGURATION PPD X
   PPD_PORT
   RESPONSE
   KEEPALIVE
END
```

PPD port selection for IPDS print: **5001** and **5002**.

PPD port selection for ICDS print: **5005** and **5006**.

Printing IPDS

To select and define an IPDS session see the following sample configuration.

```
BEGIN_CONFIGURATION SESSION
   SESSION 1
        PRESENT                YES
        INPUT_DEF
             INPUT_SEL         PPD
             ID                1
        END_SET
        TRANSFORM_D EF 1
             TRANSFORM_SEL     IPDS
             ID                1
        END_SET
        OUTPUT_DEF
             OUTPUT_SEL        PRINTER
             ID                1
        END_SET
END_SET
.
.
.
.
.
.
.
BEGIN_CONFIGURATION IPDS x
   IPDS_VP              x
END
```

NOTE: The number of sessions defined and the number of **virtual printers** used will depend on the number of concurrent IPDS sessions required.

PPD port selection for IPDS print is port no. 5001 and 5002.

See the "Define PPD" section.

Printing ICDS

To select and define an ICDS session see the following sample configuration.

```
BEGIN_CONFIGURATION ICDS X
   LANGUAGE
   AUTOCONFIG
   NOGRAPHICS
   QUERYPAGES
   HOLDTIMEOUT
   IRQTIMEOUT
   DLDTIMEOUT

   AFPTRAY_DEF X
         TRAY_SEL
          MANUAL
           ENVELOPE
   END_SET
END
```

NOTE: PPD port selection for ICDS print is port no. 5005 and 5006.

See the "Define PPD".

Define NetWare

To select and define a NetWare session see the following sample configuration. The details on configuration parameters are available in Appendix A.

```
BEGIN_CONFIGURATION_NETWARE
   LSL_FRAME_802_2                    YES
   LSL_FRAME _802_SNAP                NO
   NCP_MODE                          DS
   NCP_PREFERRED_SERVER
   NCP_PREFERRED_DSTREE              I-DATA
   NCP_DSNAME_CONTEXT               O=IDA
   EPS_MODE                          DS
   EPS_PRINTSERVER                  _PS.IDA
   EPS_PASSWORD
   EPS_FILESERVER                   IDA1_FS
   EPS_MSG_FILENAME
   EPS_BINDERY_POLL_TIMEOUT         15
END
```

a typeful distinguished context name of the EPS.

a typeless distinguished login name of the EPS.

Define ENP session

To select and define an ENP session see the following sample configuration. The details on configuration parameters are available in Appendix A.

```
BEGIN_CONFIGURATION ENP x
   PRINTERNUMBER
   FILESERVER
   PRINTSERVER
   MODE
    SHARET IMEOUT
END
```

Define ida 802.2

To select and define an ida 802.2 protocol for a session, see the following sample configuration.

```
BEGIN_CONFIGURATION 802_2
  ALIASNAME
END
```

Define ida 802.2

Subsequently you should check the configuration of the ida 802.2. See the sample below.

```
BEGIN_CONFIGURATION ida802_2 1
  INSTREAM_802_2                  NATIVE
END


BEGIN_CONFIGURATION ida802_2 2
  INSTREAM_802_2                  IPDS
END
```

Define NetBEUI/NetBios

Check the configuration of the NetBEUI/NetBios. As default this protocol is enabled. See the sample below.

```
BEGIN_CONFIGURATION NETBIOS
  SERVER_NAME                     <NetBIOS server name>
  WORKGROUP                       WORKGROUP
END
```

Define Printer session

To select and define a Printer session see the following sample configuration.

```
BEGIN_CONFIGURATION PRINTER X
   DESCRIPTION
   DUPLEXINTALLED
   OFFSETINSTALLED

   PRINTPORT_SER

   TRAY_DEF X
        DESCRIPTION
        PAPER_SEL
   END_SET
   .
   .
   .
   .
   .
   .

   LANGUAGE_DEF_PCL5
        OFFSETREG
        GMACROS
        RASTEROP
        PATTERNS
        CTABLES
   .
   .
   .
   .

END
```

3.7 Setting Up via BOOTP server

The TCP/IP BOOTP daemon on the server supports one or more remote devices. When the *PrintServer* is powered on, it broadcasts an initialisation request to all LAN systems. The BOOTP server receives the hardware address and looks for a match of the hardware address in the BOOTPTAB file. The BOOTP server has a BOOTPTAB file which is a correspondence file for hardware addresses and IP addresses. When the matching hardware address is located, the BOOTP server sends back (using UDP protocol) an IP address, a subnet mask and other information to the *PrintServer* in order to activate the unit. The data flow is as follows:

1. Upon startup, the remote device broadcasts its MAC address. (The universal MAC address is stated on the rear panel of the remote device). Upon receipt of this broadcast, the BOOTP server makes a reply.

2. The BOOTP daemon searches for a corresponding MAC address in the BOOTPTAB configuration file. If a match is found, the BOOTP daemon returns an IP address and other pieces of information defining the unit in the network.

MAC Address

Print Server	⟶	BOOTP daemon
	⟵	

**IP Address
Subnet Mask
Gateway Address
Bootfile**
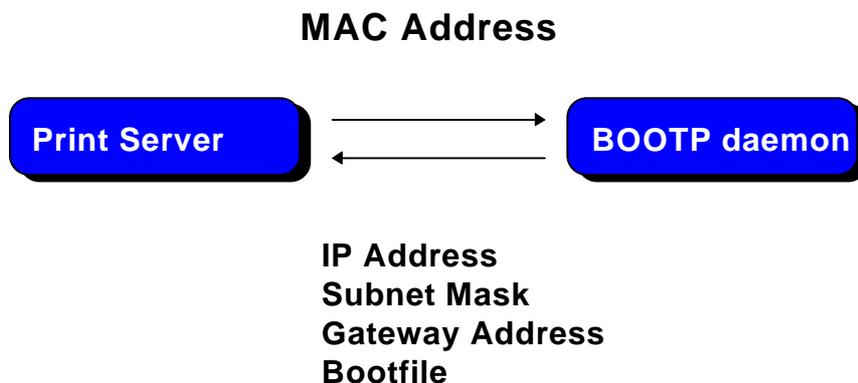
Defining the unit in the network

BOOTPTAB Device Entry

Each device has its own special entry. In this entry the name of the device, MAC address etc. are given. References may also be given to a bootfile (bf).

NOTE: Do not confuse BOOTPTAB file with bootfile (bf).

Bootfile Entry

The bootfile entry refers to a file which contains the additional configuration settings for the particular device. In the bootfile, a reference may also be given to a microcode file.

Microcode File

This file contains the microcode file that can be downloaded to the print server. For further details please see *Appendix B: Microcode Upgrading.*

Setting up BOOTPTAB Device Entry

A device entry is made up with the following notations:

Notations used in BOOTPTAB file:		
bf	=	bootfile
ds	=	domain name server address list
gw	=	gateway address list
ha	=	host hardware address (must follow ht and be in hex)
hd	=	home directory
hn	=	send host name (boolean tag)
ht	=	host hardware type (must precede ha)
ip	=	host IP address
sm	=	subnet mask
tc	=	template host (points to similar host entry)

Typical BOOTPTAB file entry:

```
ps13: ht=ETH: ha=00036e00172a: ip=192.0.110.1:\
sm=255.255.255.0: gw=192.0.110.0: bf=/tcp/etc/myfile.cf2
```

Fig. 3-2 BOOTPTAB file sample (OS/2 environment)

where

ht = ETHER (Ethernet hardware type)
ha= 00036E00172A (MAC address)
ip = 192.0.110.1 (IP address)
sm = 255.255.255.0 (subnet mask)
gw = 192.0.110.0 (gateway)
bf = /TCP/etc/myprint.cf2 (path to boot file; i.e. name of the bootfile that is used for print server setting)

For a full list of notations used in the BOOTPTAB file please see above.

NOTES:

1. The bootfile and microcode must be in the same disk partition as BOOTPTAB.

2. A **forward slash** indicates directory path in bootfile specifica tion

3. A **back slash** means line continuation

For details on modifying the configuration file, see section 3.6.

3.7.1 BOOTP process

So far, this chapter has only been dealing with the setting up of the *PrintServer* from a BOOTP server. However, the *PrintServer* can also be equipped with a so-called " default configuration". This default configuration will be carried out if the *PrintServer* cannot detect a BOOTP server at the time the *PrintServer* is powered on. The default settings are similar to the ones defined on the BOOTP server. For an illustration of this boot event, please see the flow chart below.

```
┌──────────┐      ┌──────────┐       ◇ Send BOOTP ◇   NO
│ Power ON │ ───► │ Attach to│ ────► ◇   request   ◇ ──────────────────────┐
└──────────┘      │   LAN    │        ◇            ◇                        │
                  └──────────┘             │                                │
                                     YES   │              NO                │
                                           ▼      ◄──────────────────┐      │
                  ┌──────────────┐   ◇ Answer ◇  NO  ◇ Default ◇     │      │
                  │Transmit BOOTP│──►◇ from BOOTP◇──►◇ config.  ◇ ───┘      ▼
                  │   request    │   ◇ server?? ◇    ◇ present?? ◇
                  └──────────────┘        │               │
                                     YES  │          YES  │
                                          ▼               ▼
                           ┌──────────────────┐    ┌──────────┐
                           │ Read BOOTPTAB    │    │ Load     │
                           │ file:            │    │ default  │
                           │ - IP address     │    │ IP address│
                           │ - bootfile (if any)│  └──────────┘
                           │ - microcode file │
                           └──────────────────┘
                                      \            /
                                       ┌──────────┐
                                       │ Ready to │
                                       │  print   │
                                       └──────────┘
```
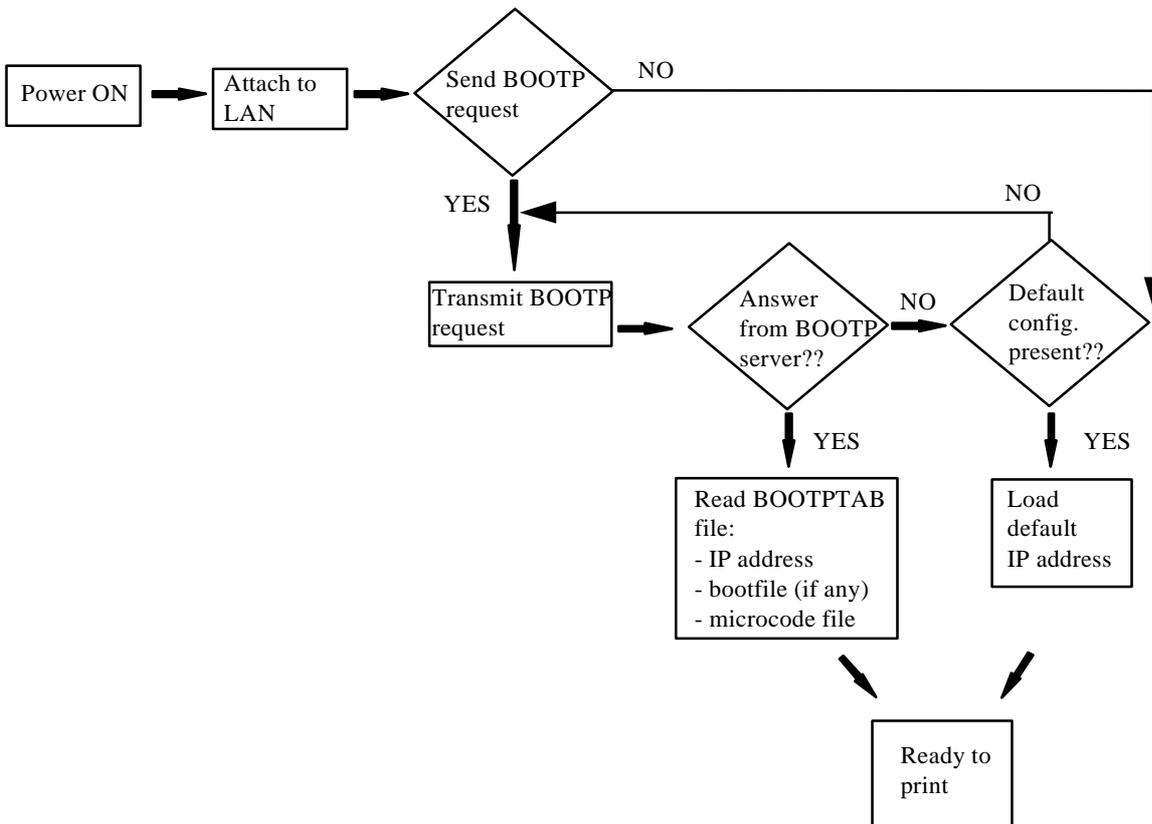
Default Configuration

3.7.2 Setting up the TFTP Daemon

For the BOOTP server to download the settings to the print server, TFTP must be enabled.

TFTP in AIX Environment

The TFTP daemon is normally managed by the INETD super-daemon. The INETD starts a TFTPD when a request is received. The TFTPD satisfies the request and then dies. You need to configure INETD so that it performs this service. This can be done in the following way using the SMIT command (**S**ystem **M**anagement **I**nterface **T**ool):

NOTE: It can only be done with superuser a uthority (i.e. use the su command to switch to root user).

1. Type SMIT.

2. Select the following items in order to configure the TFTP daemon.

> - Communications Applications and Services
> - TCP/IP
> - Further Configuration
> - Server Network Services
> - Other Available Services
> - Super Daemon (INETD)
> - INETD Subservers
> - Add an INETD Subserver

3. When the menu "Available Subservers" appears, use the "LIST" function .

> **NOTE**: The TFTPD will only be on the list if not already created.

You can also check **/etc/inetd.conf** to see whether the tftpd line is commented out. But you should use SMIT to update **inetd.conf** for TFTPD. Do not update **/etc/inetd.conf** manually for TFTPD as you would for the BOOTPD.

SMIT does not allow you to place the BOOTPD under INETD. The **/etc/inetd.conf** file must be updated manually for the BOOTPD.

You should ensure that there is no **/etc/tftpaccess.cfg** file. It can be used to control access to files by remote TFTP users.

TFTP in OS/2 Environment

1. Start TCP/IP Configurati on located in the TCP/IP folder.

2. Select the Autostart tab.

3. Tick the box labelled "Enable this machine to start the INETD super server".

4. Tick the box labelled "Enable others to access your files by using TFTP". Also tick the "INETD" push-button.

5. Shutdown your "TCP/IP Configuration" and check that the new settings have been saved.

6. Restart the INETD.

3.7.3 Starting the BOOTP Server

This section provides you with instructions for starting the BOOTP server.

After making the necessary amendments to the BOOTPTAB file, you are now ready to start the BOOTP server and then verify the configuration by performing a test printout.

1. Start the BOOTP server

    Use the BOOTP server debug option (-d) to verify the correct operation.

    E.g.   **bootpd   -b -d -d -d -d -d**

    If the *PrintServer* and the BOOTP server are not on the same LAN segment, the BOOTP server must be started with the -b option. This enables the BOOTP reply to cross bridges.

2. Power the *PrintServer* off and back on.

3. After a while, check that the Power LAN LED stays lit.

4. Proceed to section: "Testing *PrintServer*".

3.8 Testing PrintServer

1. Perform a test printout by pressing the TEST key on the rear panel.

2. Verify that the settings match the definitions in the BOOTPTAB file and the bootfile. Appendix D contains settings printout.

3. ''PING'' the unit from the workstation to verify physical LAN and IP network connectivity.

    a. Invoke the PING command and the IP address or host name of the unit. For example:

        PING 192.0.110.1

    b. If the PING is OK, you receive a system response like this:

    ```
    PING 192.0.110.1: 56 data bytes
    64 bytes from 192.0.110.1: icmp_seq=0.  time=0.
    ms
    64 bytes from 192.0.110.1: icmp_seq=1.  time=0.
    ms
    64 bytes from 192.0.110.1: icmp_seq=2.  time=0.
    ms
    64 bytes from 192.0.110.1: icmp_seq=3.  time=0.
    ms
    64 bytes from 192.0.110.1: icmp_seq=4.  time=0.
    ms
    ```

    ....
    ....

3. Press CTRL-BREAK to end the PING process. You will then get the following output statistics:

    ```
    ----192.0.110.1 PING Statistics ----
    5 packets transmitted, 5 packets received, 0%
    packet loss round-trip (ms)  min/avg/max 0/0/0
    ```

    NOTE:
    If the PING does not reoccur, only reoccurs once, or if problems arise with another LAN device, please check the chapter on "Problem Determination"

3.9 About the PING function

The ICMP PING function sends an echo request to the *PrintServer* stated in the IP address. The PING function is useful for:

- Determining the status of the network and various foreign hosts

- Tracking and isolating hardware and software problems.

- Testing, measuring and managing networks.

4. Novell Setup for IPX/SPX

This chapter provides instructions as to the configuration of Novell NetWare to connect the *PrintServer* using the IPX/SPX protocol.

The *PrintServer* is able to run with NetWare v.3.1x in BINDERY emulation as well as v.4.xx (the latter being backwards compatible) in Directory Services (DS) or BINDERY emulation.

The *PrintServer* supports printing through an embedded PSERVER (EPS) fully emulating a standard NetWare PSERVER.NLM.
Printing through the embedded NPRINTER (ENP) can also be performed. Up to two ENPs is supported.
The Novell NetWare protocols supported are: SPX, SAP, NCP and IPX.

The NetWare set-up consists of the following basic steps:
- Check the pre-requisites (described in the section "Before you begin" in the following).
- Check that the connection with the NetWare server has been established by printing a file e.g. from a NetWare connected client.

The following sections will guide you through the configuration of the Novell NetWare for IPX/SPX printing on the *PrintServer* using standard NetWare tools.

4.1 Before you begin.....

Before you proceed to the following sections, please make sure that the following settings on the *PrintServer* have been made:

- **Enable NetWare**
- **Enable IPX/SPX**
- **Set Frametype**

These settings can be set by using one of the following configuration tools:

PSInst32	(see chapter 3)
TELNET	(see chapter 3)
Web browser	(see chapter 3)
Configuration file	(see chapter 3)

The following sections provide instructions for setup of the IPX/SPX protocol for the embedded PSERVER and the embedded NPRINTER via the standard NetWare tools PCONSOLE or NetWare Administrator.

4.2 Using the embedded PSERVER

To set up the embedded PSERVER, select either TELNET or the configuration file as a configuration tool.

☞ The physical location of the embedded PSERVER (EPS) is the *Xerox 4500 PS ETH.*

4.2.1 Embedded PSERVER setup

To use the embedded PSERVER in the *Xerox 4500 PS ETH* it must be defined in the Novell NetWare system and the definitions here must match the settings made for the PSERVER in the configuration file or set via the TELNET.

> Configuring the EPS via TELNET, see chapter 3.
> Configuring via PSInst32, see chapter 3.
> Configuring via Web browser, see chapter 3.
> Configuring the EPS via configuration file, see chapter 3.

The following keywords are EPS specific and must be specified either via TELNET, PSinst32 or via the configuration file.

EPS mode: The PSERVER is able to run in both Bindery (3.1x) and Directory Service (4.xx) modes.

EPS printserver: The print server name (i.e. logon name). (**NOTE**: In DS mode, it must be a typeless distinguished name, e.g. _PS.international.i-data ######, except if "Country" is top level of the NDS tree (typefull), it will be e.g. CN=_PS.OU=international.O=i-data.C=DK

EPS password: The password to use when logging in to the operating environment (Bindery and DS).

EPS fileserver: The fileserver to where the EPS is to log into. **NOTE**: On the Novell Server you must set "Reply to get nearest server" to **ON**.

NOTE: The EPS residing in the *Xerox 4500 PS ETH* is able to support up to 16 ENPs.

4.3 Using the embedded NPRINTER

To setup up the embedded NPRINTER, select either TELNET or the configuration file as a configuration tool.

☞ The physical location of the embedded NPRINTER is in the *Xerox 4500 PS ETH.*

4.3.1 Embedded NPRINTER setup

With the implementation of ENP (NPRINTER) in the *Xerox 4500 PS ETH*, the attached printer can be directly connected to the network. The NPRINTER runs in both Bindery and Directory Services environments.

The embedded NPRINTER receives the print job from the Novell print server (PSERVER) or the embedded PSERVER in the PS and prints it.

The embedded NPRINTER supports native print data only (PCL, PostScript).

The NetWare PCONSOLE or NetWare Administrator are the tools to be used when setting up the embedded NPRINTER.

Configuring the ENP via TELNET, see chapter 3.
Configuring via PSInst32, see chapter 3.
Configuring via Web browser, see chapter 3

> Configuring the ENP via configuration file, see chapter 3.

The following keywords are ENP specific and must be specified in either TELNET, PSinst32 or the configuration file.

ENP mode:	Selects which mode to use. Options are Bindery and DS mode.
ENP printer number:	Selects which Novell NetWare printer number to use.
Printserver:	Selects which Novell NetWare printserver to use.
Fileserver:	Selects which Novell NetWare fileserver to attach to.

NOTE: The *Xerox 4500 PS ETH* is able to support up to 2 ENPs. Each *Xerox 4500 PS ETH* with a defined EPS is able to support up to 16 ENPs.

Printing command example

When the user wishes to send a print job to the attached printer, the following command can be used:

Example: NPRINT MYPRINT Q=PQ2
   Where PQ2 is the queue supported by the NPRINTER.

This functionality is set via keyword parameters in the configuration file.

4.4 NetWare setup - Bindery mode

This section describes the setting up of the NetWare version 3.1x or later for IPX/SPX printing using *Bindery* mode. If you use NetWare version 4.xx you should consider using DS mode as described in the next section.

> **NOTE**:
> You must either load the PSERVER.NLM on the server or define the embedded PRINTSERVER in the *Xerox 4500 PS ETH* before connecting the NPRINTER.

1. Type "**PCONSOLE**" to start the PCONSOLE program

2. Make sure that you have selected the correct file server. If not, select the correct by selecting the menu "**Change current file server**"

3. Select "**Print Queue Information**" from the main menu to set up a queue to service the *PrintServer.*

4. Press **INS** to create a new queue and type a name for this new queue. The queue name is user-defined and used for printing and monitoring.

5. Select the new queue and press **ENTER**.

6. From the menu "**Print Queue Information**" select "Queue Server" and press **ENTER.**

7. Press **INS** for a list of Print Servers.
   The list will show both n on-embedded Print Servers and embedded Print Servers.

8. Select the appropriate Print Server from the list "Queue Servers Candidates" and press **ENTER.**
   If defined on the system, one of the candidates is the embedded Print Server*.*

9. Press **ESC** three times to go to the main menu "**Available Options**" and select "**Print Server Information**"

10. Select the appropriate Print Server and press **ENTER**

11. From the "**Print Server Information**" menu select "**Print Server Configuration**".

12. Then from the "**Print Server Configuration**"menu select "**Printer Configuration**" and press **ENTER**

13. From the list "**Configured Printers**"select either an already configured printer to change or select one of the printers " **Not Installed**" and press **ENTER.**
Notice that the number of the printer must correspond to the ENP number in the *PrintServer* configuration of ENPs. The default *PrintServer* ENP numbers are 0 and 1.

14. Type a name for the printer in the " **Printer X Configuration**"menu

15. Select "**Type**" and press **ENTER** and select "**Remote Other/Unknown**".

    Now make other NPRINTER configuration if so required

16. Press **ESC** to leave the menu and select **YES** to save changes.

17. Press **ESC** to return to the "**Print Server Configuration**"menu.

18. Select "**Queues Serviced by Printer**"and press **ENTER**

19. Select the appropriate printer and press **ENTER**.

20. Press **INS** and select the queue for the printer, then press **ENTER**

21. Select "**Priority**" for the printer

22. Press **ESC** six times and answer **YES** to exit PCONSOLE

 **Proceed to the configuration of the various settings.
 For configuration details, see chapter 3.**

4.5 NetWare setup - DS mode: PrintServer and NW4.1x Configuration

This description allows you to quickly configure one NetWare 4.1X Server including PrintServer, Printer and Queue plus the Xerox PrintServer for Native printing via IPX/SPX.

During this description, we will be using the "Nwadmn95/NT" GUI administration tool for the configuration of NetWare and the i-data PrintServer Configuration Tool, "PSinst32", for the configuration of the Xerox PrintServer.

When setting up, it is important that you make sure you have **always** defined a PrintServer, a Printer and a Queue on the NetWare System. Using the "Print Services Quick Set-up..." you can define all of this in one step.

Start the Nwadmn95/NT:

Browse through the NDS Tree and highlight the Container Object in which the PrintServer, Printer and Queue should be located. Select "TOOLS" from the Menu Bar and then "Print Services Quick Set-up":
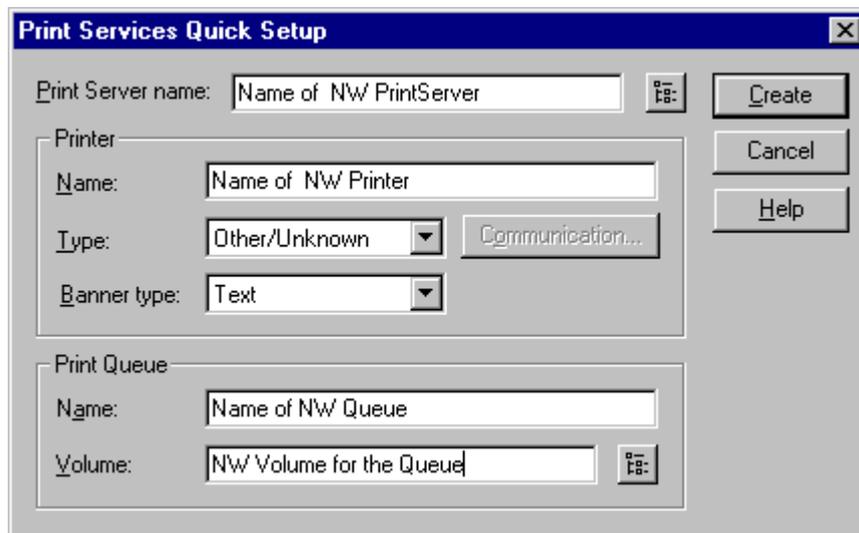
Type in the name of the PrintServer to create it or use the "Browse" button next to the PrintServer Name window to browse the NDS Tree for existing PrintServers (only if the EPS is not going to be used in the Xerox PrintServer, meaning that the PSERVER.NLM is loaded on a NetWare File Server).

Type in the name of the Printer to be created and set the Type to "Other/Unknown".

Type in the name of the Queue to be created. Use the "Browse" button next to the "Volume" window to browse the NDS Tree for existing NW Server Volumes (do not choose SYS Volume).

Finally, click the "Create" button to create the NW PrintServer, Printer and Queue.

Open the Container where the PrintServer is located and double-click on the PrintServer. The window below will now be displayed:
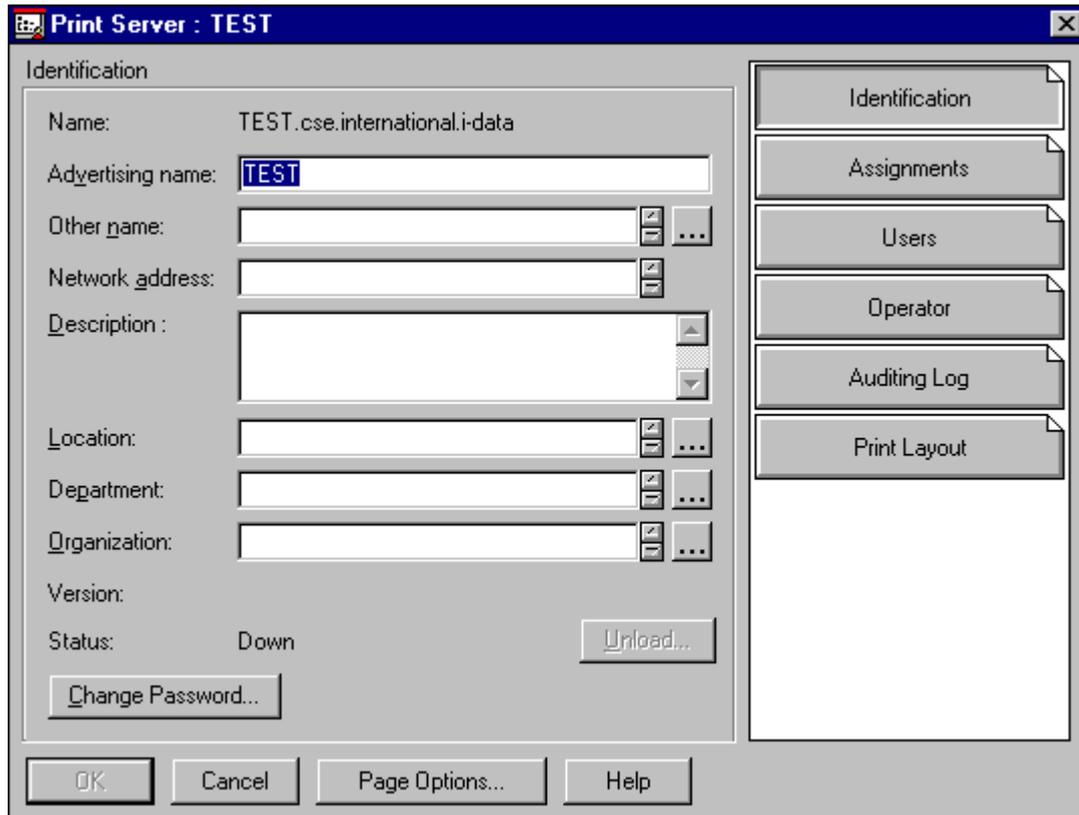
NOTE:
Information for EPS Set-up:
"Name"   =   "EPS PrintServer" in PSinst32:
    TEST.cse.international.i-data
(be aware that NDS is case sensitive).

Information for ENP Set-up:
"ENP PrintServer" in PSinst32:   *TEST*
("ENP PrintServer" do only use the Common Name alone without the context "cse.international.i-data")

Click the "Assignments" button and the window below will be displayed:
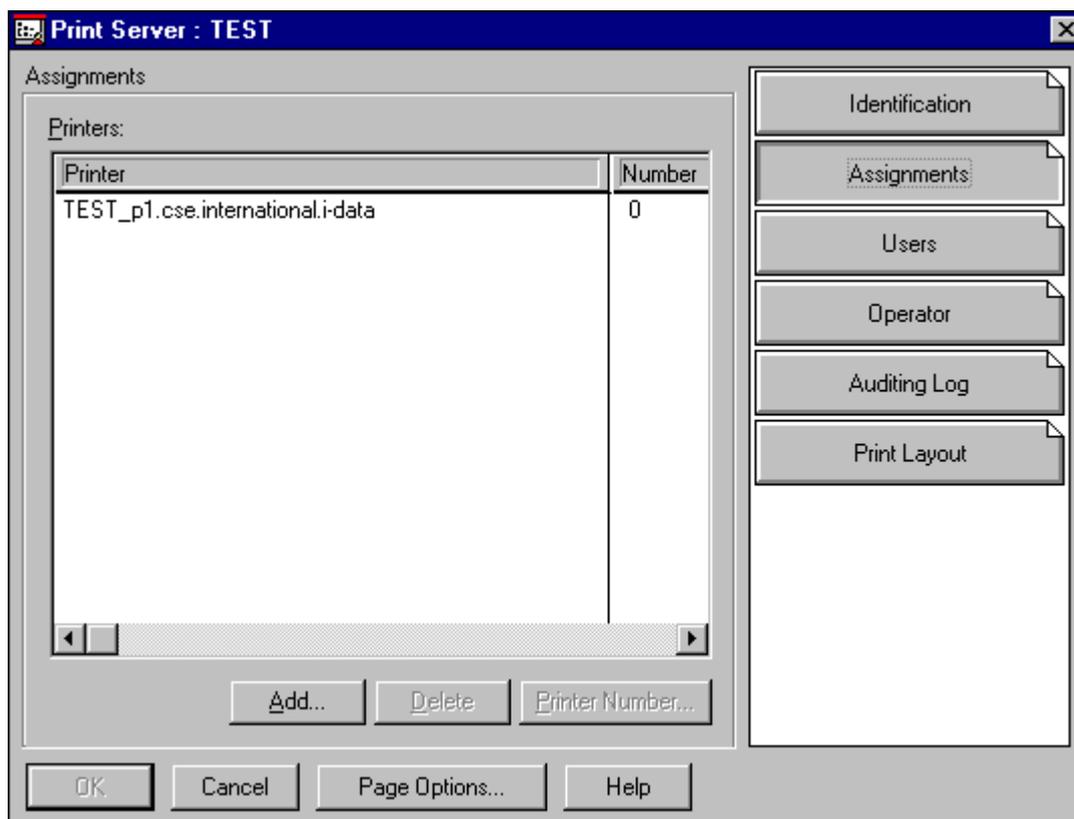
NOTE:
Information for ENP Set-up:
"Number"   =   "ENP Printer" in PSinst32:   *0*

In order to verify the "Server Name" + "Frame Type" + "Context" and "Tree Name", select "TOOLS" and then "Remote Console" from the Nwadmn95/NT Menu Bar.

Choose connection type "SPX" and highlight the NetWare Server Name for which the PrintServer configuration is made. Press ENTER and type in the password for Rconsole.

Press ALT + F1 to enter "Available Options". Highlight "Select A Screen To View" and press ENTER to enter "Available Screens" and select "System Console". The command CONFIG should now be executed.

Below is a screen dump of the System Console after executing the CONFIG command:

File server name: CSE
IPX internal network number: 336DE04A
   Node address: 000000000001
   Frame type: VIRTUAL_LAN
   LAN protocol: IPX network 336DE04A
Server Up Time: 12 Days 23 Hours 42 Seconds

IBM PCI Token Ring Adapter Hardware Specific Module
   Version 1.02   1 June 1996
   Hardware setting: Slot 6, I/O ports 4400h to 44FFh, Interrupt Bh
   Node address: 0004AC57BC49
   Frame type: TOKEN-RING
   Board name: IBMTRPO_1_TOK
   LAN protocol: IPX network 00002001

IBM PCI Token Ring Adapter Hardware Specific Module
   Version 1.02   1 June 1996
   Hardware setting: Slot 6, I/O ports 4400h to 44FFh, Interrupt Bh
   Node address: 0004AC57BC49
   Frame type: TOKEN-RING_SNAP
   Board name: IBMTRPO_1_TSP
   LAN protocol: ARP
   LAN protocol: IP address 128.0.119.100 mask FF.FF.0.0 interfaces 1

Tree Name: IDA
Bindery Context(s):
   cse.international.i-data

CSE:

NOTE:
Information for idaPrintServer Set-up:
"File server name" = "NCP Preferred Server" in Psinst32: *CSE*
                          "EPS File Server" in Psinst32:   *CSE*
                          "ENP File Server" in Psinst32:   *CSE*

Information for idaPrintServer Set-up:
"Tree Name"   =   "NCP Preferred DS-Tree" in PSinst32:
   IDA
"Bindery Context" = "NCP DS Context" in PSinst32:
   cse.international.i-data
(the first Bindery Context is the context where the NW File Server is located in the NDS Tree).

Start the i-data PrintServer Configuration Tool "PSinst32":

Put in all the collected parameters to reflect the configuration done in NetWare.

The following are screens from Psinst32 setting up the Xerox PrintServer:

Configure IPX/SPX

IPX_SPX Settings

NCP Mode	DS
NCP Preferred Server	CSE
NCP Preferred DS-Tree	IDA
NCP DS Context	cse.international.i-data

Printer Settings

ENP...   EPS...

OK   Cancel   Default   Help

Configure ENP (Embedded N-Printer)

ENP 1

ENP Mode	DS
Enp Printer	0
ENP File Server	CSE
ENP Print Server	TEST

ENP 2

ENP Mode	DS
ENP Printer	1
ENP File Server	
ENP Print Server	

OK   Cancel   Default   Help

Configure EPS (Embedded PrintServer)

EPS Mode	DS
EPS FileServer	CSE
EPS PrintServer	TEST.cse.international.i-data
EPS Password	

OK   Cancel   Default   Help

> **NOTE:**
> **Disable the EPS if using a PrintServer (PSERVER.NLM) which is loaded on a NetWare File Server.**

4.3.1 Trouble Shooting:

- Preferred Server, EPS File Server or ENP File Server is not correct.

- DS Tree is not correct.

- DS Name context is not correct.

- EPS PrintServer is entered using only the Name and not the Name + context.

- EPS PrintServer is not entered using Name + full context:
  Wrong: TEST.cse.international
  Correct: TEST.cse.international.i-data

- If "Country" is top level of the NDS Tree, EPS PrintServer needs to be the Type-Full Name.
  Wrong: TEST.cse.international.i-data. **DK**
  Correct: CN=TEST.OU=cse.OU=international.O=i-data. **C=DK**

- EPS Password is defined in NetWare and not in idaPS or vice versa.

- Queue has been assigned to the Printer or Printer has not been assigned to the PrintServer.

- Printer Number is incorrect.

- The ENP's PrintServer is entered using Name + context.
  Wrong: TEST.cse.international.i-data
  Correct: TEST

4.6 Illustration

See the illustration in the following how the print request from the user is sent to the assigned printer.
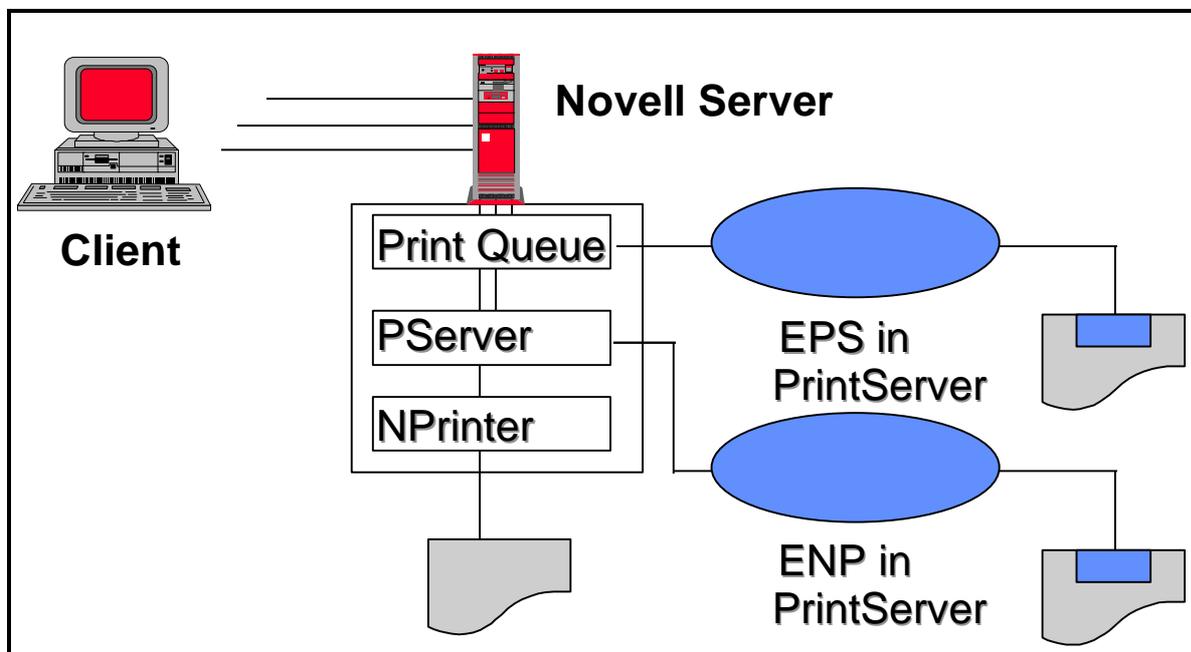
Novell LAN Printing with PrintServer

5. NetBEUI/NetBIOS Printing Using Windows '95, NT or OS/2

This chapter provides instructions for setting up the Windows '95, NT or OS/2 operating systems for native printing via the *Xerox 4500 PS ETH* using the NetBEUI/NetBIOS protocols.

Before you begin the setup procedure, please ensure that the NetBEUI/NetNIOS protocols have been properly installed on your network.

5.1 Windows '95 and NT Setup

To set up the Windows '95 and NT systems follow the below instructions:

Via the "Network Neighborhood" icon on your desktop, you select the "entire network" entry. Now open the default "Workgroup".

Last 6 digets of MAC address

The default name of the PrintServer will appear in the workgroup like this:

```
Workgroup                                    _ □ ✕
File  Edit  View  Help
🖳 Ida002efe        🖳 Ida003082        🖳 Ida0030d0
◄                                                    ►
1 object(s) selected
```

Only appears if PAR2 has been set to output
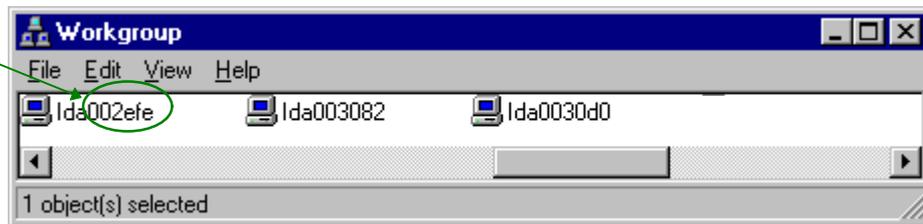
Now doubleclick the name of the PrintServer for configuration of the printers available in the PrintServer:

```
Ida002efe                                    _ □ ✕
File  Edit  View  Help
P1_Printer_1        P2_Printer_2
2 object(s)
```
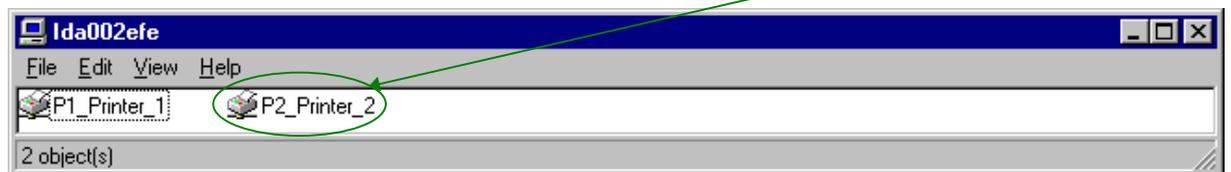
Again you doubleclick this entry to enter the printer selection mode. You will encounter the following query to which you answer "yes":

```
Printers                                              ✕
  ⓘ  Before you can use the printer '\\IDA002EFE\P1_Printer_1', it must be set up on your computer. Do you want Windows
      to set up the printer and continue this operation?

              [   Yes   ]      [   No   ]
```
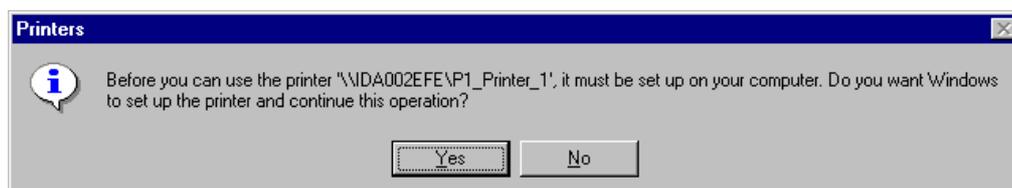
The "Add Printer Wizard" will then open and you may select manufacturor and printer model via the wizard.

> **NOTE:**
> **The NP Windows drivers may be obtained from the IBM Web Site or you may contact your point of purchase for details.**

> **NOTE:**
> **During the set up, you may need access to the original installation CDROM for Windows '95 and NT.**

5.2 OS/2 Setup

To set up the OS/2 operating system follow these instructions:

1. Open an OS/2 window

2. Enter the following command at the prompt:
   net view \\ <PrintServer name>

   NOTE:
   The default PrintServer name is "idaxxxxxx" where the six "x'es" represent the last six digets of the MAC address

3. Press RETURN

4. Now enter this command:
   net use lptx \\idaxxxxxx\Px_Printer_x

5. You have now captured your port for the PrintServer and you next step is then to install a printer.

```
[D:\] net view \\ida002efe
Shared resources at \\ida002efe


Net name        Type         Used as       Comment
-------------------------------------------------------------------------------------
P1_Printer_1  Print                        idaPS printer
P2_Printer_2  Print                        idaPS printer
The command completed successfully.


[D:\] net use lpt1  \\ida002efe\P1_Printer_1
The command completed successfully.
```

Example of setup for OS/2

5.3 Changing the default PrintServer Name & Workgroup

This can be done using any of the available configuration methods:

Psinst32:   see section 3.3
Web Browser: see section 3.4
Telnet: see section 3.5
Setup file: see section 3.6

6. OS/2 Printing Using TCP/IP LPR/LPD

This chapter provides the three methods available for printing from OS/2 based PC's with TCP/IP installed:

1.   Via print queue output sele ction
(see *Section 5.1* below for details).

2.   Via redirection of LPTx port with LPR command
(see *Section 5.2* below for details).

3.   Redirection of LPTx port with LPRMON command
(see *Section 5.3* below for details).

Once these parameters have been configured, and the basic TCP/IP installation of the *Xerox 4500 PS ETH* has been completed, direct printing from OS/2 will be possible.

6.1 OS/2 printing via a print queue

1. Open the "**Templates**" folder.

2. Drag and drop the printer icon onto the desktop.

   The "Settings" menu for the printer will now open automatically.

3. Give the printer a name and select the printer driver required.

4. Select the output port to be used by clicking one of the "LPD pipes".

   e.g.   \PIPE\LPD0.

6. Give the LPD server a name
   This may be either the IP address or the name which the *Xerox 4500 PS ETH* has been given on a Name Server.

7. Give the LPD printer a name
   The default LPD printer names defined in *Xerox 4500 PS ETH* are LPTPRT1 and LPDPRT2.

   The LPDPrt1acr and LPTPrt2acr may also be used if a <CR> is required at each linefeed.

   The rest of the fields in this panel are optional.

8. Click on "**OK**" and the window will close.

9. Click on "**Create**" to create the printer

NOTE: The LPRPORTD program must be started for this facility to function.

6.2 OS/2 printing using LPR command

The LPR command may be used to print to the *Xerox 4500 PS ETH.*

To invoke the LPR command from the command line, type e.g. the following command::

LPR -b -pLPDPrt1 -s192.0.110.1 myprint.pcl

To avoid having to type this every time, the parameters can be included in a **.CMD** file.

For more details on the options available with the LPR command you are referred to the chapter "Entering the LPR Command" in the "TCP/IP for OS/2 User's Guide" or to the " TCP/IP Command Reference".

6.3 OS/2 printing via redirection of LPTx Port with LPRMON command

The LPRMON command is similar to the LPR command but provides an on-screen monitoring facility of the data transfer to the *Xerox 4500 PS ETH.*

The LPRMON command may be invoked from the command line typing e.g.:

LPRMON -b -pLPDPrt1 -s192.0.110.1 LPT1

The above command may also be included in a **.CMD** file for ease of operation.

For more details of the LPRMON command, please consult the LPRMON section of the "TCP/IP for OS/2 User's Guide" or the "TCP/IP Command Reference".

7. UNIX Printing Using TCP/IP LPR/LPD

Below is information on how you print from the three following UNIX systems.

1. **AIX**   Version 3.2.5
              Version 4.1
              (see *Section 6.1* below for details)

2. **SunOS**   Rel. 5.3, Open Windows Version 3.3 (equivalent to Solaris)
              (see *Section.6.2* below for details)

3. **HP-UX**   (TCP/IP spooler not used)
              (see *Section 6.3* below for details)

Once these parameters have been configured, and the basic TCP/IP installation of the *PrintServer* completed, direct printing from UNIX will be possible.

7.1 AIX printing using TCP/IP LPR/LPD

<u>Version 3.2.5</u>

Before you can print via AIX version 3.2.5, the following 2 steps must have been completed:

1. Host Configuration

You must make sure that the *Xerox 4500 PS ETH* is defined as a host system. This can be done by using the **smit** command. Use of this command requires root authority (i.e. use the su command to switch to the root user). Alternatively, you may add the additional IP entries manually by editing the /etc/hosts file and appending the additional IP address and name for the *Xerox 4500 PS ETH.*

2. Define the remote printer using smit

1. Enter the **smit** command.

2. Use the following menu selections to supply the printer information:

    - Spooler (Print Jobs)
    - Manage Remote Printer Subsystem
    - Client Services
    - Remote Printer Queues
    - Add a Remote Queue

    The entries shown in the [Entry Fields] column below are sample entries for the "Add a remote queue" panel.

	[**Entry Fields**]
NAME of queue to add	[your name]
ACTIVATE the queue?	yes
Will this become the DEFAULT queue?	no
Queuing DISCIPLINE	first come first served
ACCOUNTING FILE pathname	[]
DESTINATION HOST for remote jobs	[your host]
Pathname of the SHORT FORM FILTER for queue status output	[/usr/lpd/bsdshort]
Pathname of the LONG FORM FILTER for queue status output	[/usr/lpd/bsdlong]
Name of QUEUE on remote printer	[LPDPrt1]
NAME of device to add	[LPDPrt1]
BACKEND PROGRAM pathname	[/usr/lpd/rembak]

NOTE:
Make sure that the pathname of the short and long form filter are modified to **bsdshort/bsdlong**

The name of QUEUE on remote printer and NAME of device to add should be the same and one of the following

LPDPrt1
LPDPrt2
LPDPrt1acr
LPDPrt2acr

Once the printer has been defined, printing can be performed using the lp, lpr, qprt or enq commands.

Version 4.1

Before you can print via AIX version 4.1, the following 2 steps must have been completed.

1. Host Configuration

You must make sure that the *Xerox 4500 PS ETH* is defined as a host system. This can be done by using the **smit** command. Use of this command requires root authority (i.e. use the su command to switch to the root user). Alternatively, you may add the additional IP entries manually by editing the /etc/hosts file and appending the additional IP address and name for the *Xerox 4500 PS ETH*.

2. Define the remote printer using smit

1. Enter the smit command

2. Use the following menu selections so supply the printer information:
   - print spooling
   - add a print queue
     └→ select "remote"
       └──→ select "standard processing"

	[**Entry Fields**]
NAME of queue to add	[your name]
HOST name of remote server	[user definable]
NAME of queue on remote server (see *NOTE*)	[user definable]
Type of print spool on remote server	bsd
Description of printer on remote server	[user definable]

Mandatory ↗ →↘ (pointing to NAME of queue, HOST name, NAME of queue on remote server)

Optional ↗↘ (pointing to Type of print spool, Description of printer)

NOTE:
You should make sure that the path name of the short and long form filter are modified to **bsdshort/bsdlong**

The name of QUEUE on remote printer and NAME of device to add should be the same and one of the following

LPDPrt1
LPDPrt2
LPDPrt1acr
LPDPrt2acr

Once the printer has been defined, printing can be performed using the lp, lpr, qprt or enq commands.

7.2 SUN OS printing using TCP/IP LPR/LPD

The following procedure can be used to configure a printer on a remote system without using the TCP/IP print spooler function.

1. Host Configuration

Ensure that the *Xerox 4500 PS ETH* is defined as a host system. This can be done using the ' *"admintool"* function. Use of this command requires root authority (i.e. use the **su** command to switch to the root user). Alternatively, you may add the additional IP entries manually by editing the /etc/hosts file and appending the additional IP address and name for the *PrintServer (non-IPDS)*.

2. Defining the remote printer/plotter using "admintool"

1. Enter the **admintool** command. (*Use of this command will require root authority*)

2. Use the following menu items to supply the printer information:

   Printer manager (Edit)
   Add printer
   Add access to remote printer

   The following information must be supplied on the "Add access to remote printer panel":

   ### Printer Name
   The printer name is the queue name on the *Xerox 4500 PS ETH.* Depending on the type of print that will be printed (raw or auto-carriage return (ACR)) and the attached output printer (LPT1 or LPT2), this name can be one of the following:

   LPDPrt1
   LPDPrt2
   LPDPrt1acr
   LPDPrt2acr

   ### Print Server
   The printer server name must be the same as the host name supplied in the host table.

   ### Printer Server OS:
   For LPDPrt1 and LPTPrt2, BSD (Berkeley) should be selected.

3. Enable the printer using the admintool

Ensure that the printer is enabled by using the admintool and selecting the modify printer option and use the enable function.

Print can be directed to the defined printer using the supplied lp commands. The lpr command may not be supplied with the base operating system.

7.3 HP-UX printing with SAM using TCP/IP LPR/LPD

This procedure can be used to configure a printer on a remote system without using the TCP/IP print spooler function.

1. Host Configuration

Ensure that the *Xerox 4500 PS ETH* is defined as a host system. This can be done using the ''System Administrator Manager (SAM)''. Use of this command requires root authority (i.e. use the **su** command to switch to the root user). Alternatively, you may add the additional IP entries manually by editing the /etc/hosts file and appending the additional IP address and name for the *Xerox 4500 PS ETH*.

2. Defining the remote printer/plotter using SAM

1. Enter **SAM** from a HP term or xterm session.

2. Use the following menu items to supply the printer information:

   Printers and plotters
   Printers/plotters
   Add remote print/plotter

   The following information must be supplied on the ''Add remote print/plotter'' panel:

   Printer name
   This name is the symbolic name that you will be using to refer to the printer.

   Remote Print Name
   The remote print name is the queue name on the *Xerox 4500 PS ETH.* Depending on the type of print that will be printed (raw or auto-carriage return (ACR)), and the attached output printer (LPT1 or LPT2), this name can be one of the following:

   LPDPrt1
   LPDPrt2
   LPDPrt1acr
   LPDPrt2acr

   For LPDPrt1 and LPDPrt2, the option ''Remote printer is on a BSD system'' should be selected.

   Print can be directed to the defined printer using the supplied lp or lpr commands, lpr -dmyprint /users/root/sam.log.

8. Windows NT Printing Using TCP/IP LPR/LPD

Windows NT version 3.51

This section describes how to select an LPR/LPD printer from Windows NT version 3.51.

1. From the Main menu select the icon " **Control Panel**".

2. Select the "**Network**" icon.

   Make certain that the entry "**Microsoft TCP/IP Printing**" is entered into the menu "**Installed Network Software**"

   If not, click on "**Add Software**".
   From here you select the above mentioned network software from the list.

   For details on installation, refer to your Windows NT documentation.

3. From the "**Control Panel**" menu select the "**Printer**" icon.

4. From the **"Print Manager"** select the menu "**Printers**" and double-click on "**Create Printers**".

5. Enter a name for the printer in " **Printer Name**".

6. Select appropriate driver.

7. From the pull-down list in " **Print to**", select the option "**Other**".

8. From the list in "**Print Destination**" select "**LPR Port**".

9. Press "**OK**" to confirm.

10. You are now prompted to enter the IP address of the *Xerox 4500 PS ETH* and the name providing LPD.

11. In the menu "**Name of printer on that machine**" you make an entry for the default configuration "LPDPRT1".

12. Press "**OK**" to confirm.

An LPD printer has now been added.

Windows NT version 4.0

This section describes how to select an LPR/LPD printer from Windows NT version 4.0.

1. From your desktop, select "Start", "Settings" and then "Printers"

2. Doubleclick "Add Printer"

3. Select "My Computer" and click "Next"

4. Click "Add Port"

5. Doubleclick "LPR Port"

6. Add IP address in "Name or address of server providing LPD" and add "LPDPRT1" in the field "Name of printer queue on that server"

7. Click "OK"

8. Close the form "Printer Ports" and click "Next" to move on

9. Now select manufacturer and printers for your printer and click "Next"

10. Select "Printer Name" and click "Next"

11. Select "Shared" or "Not Shared" and then operating system(s) to print to this printer

12. Click "Next"

13. Select "Test Page" and then click "Finish"

14. If the printer driver selected is not yet installed on your system or if you have selected another operating system to print from, you will be asked for your original Windows NT CD-ROM to install the printer driver from. Please follow the instruction given on this CD-ROM.

9. AS/400 Printing Using Host Print Transform and TCP/IP

This chapter provides:

AS/400 definitions for ASCII printing

Once these parameters have been configured, and the basic TCP/IP configuration of the *Xerox 4500 PS ETH* has been completed, printing from AS/400 will be possible. This will use the AS/400 Host Print Transform to format and translate EBCDIC data, the command language used by the printer selected on the AS/400.

If 3812-1 emulation is required then the TCP/IP connection described in the "AS/400 SCS/DCA Printing using TCP/IP" section, should be considered.

If an SNA connection is required then the "AS/400 SCS Printing Using SNA" chapter should be considered.

If IPDS printing is required, chapter 13 "PSF/400 AFP Printing Using TCP/IP" should be considered.

☞ ***Requirements:***
- AS/400 version 3.1 with TCP/IP installed and a TCP/IP configured *Xerox 4500 PS ETH*
 The defined Output queue will be specified in print options when printing the document.

9.1 Create a remote output queue

The CRTOUTQ command is used to create a Remote output queue. This will enable the AS/400 to automatically output data that has been translated by Host Print Transform to the *Xerox 4500 PS ETH*.

The following example shows the values required to create an output queue called PSX3OUTQ.

```
                    Create Output Queue (CRTOUTQ)

Type choices, press Enter.

Output queue . . . . . . . . . . OUTQ          > PSX3OUTQ
  Library  . . . . . . . . . . .                 *CURLIB
Maximum spooled file size:       MAXPAGES
  Number of pages  . . . . . . .                 *NONE
  Starting time  . . . . . . . .
  Ending time  . . . . . . . . .
                     + for more values
Order of files on queue  . . . . SEQ            *FIFO
Remote system  . . . . . . . . . RMTSYS        > *INTNETADR

Remote printer queue . . . . . . RMTPRTQ       > XXXXXXXX
Writers to autostart . . . . . . AUTOSTRWTR    > 1
```

The value XXXXXXXX used for RMTPRTQ must match the LPD printer queue defined in the *Xerox 4500 PS ETH.* The default value is LPDPRT1.

```
                    Create Output Queue (CRTOUTQ)

Type choices, press Enter.

Queue for writer messages  . . . MSGQ           QSYSOPR
  Library  . . . . . . . . . . .                 *LIBL
Connection type  . . . . . . . . CNNTYPE       > *IP
Destination type . . . . . . . . DESTTYPE      > *OS400
Transform SCS to ASCII . . . . . TRANSFORM     > *YES
Manufacturer type and model  . . MFRTYPMDL      *XXXXXXXX
Internet address . . . . . . . . INTNETADR     > '    YYY:YYY:YYY:YYY '
Destination options  . . . . . . DESTOPT        *NONE

Text 'description' . . . . . . . TEXT          > 'ASCII outq for Sales PSx4'
```

The value *IP must be used for CNNTYPE
The value *OS400 must be used for DESTTYPE
The value *YES must be used for TRANSFORM
The value used for MRFTYPMDL will depend on the attached printer. Use the 'F4' to obtain a list of the possible choices
The value YYY:YYY:YYY:YYY used for INTNETADR must be the same as the IP address of the *Xerox 4500 PS ETH.*

9.2 AS/400 printing

In order to print to the *Xerox 4500 PS ETH*, the OUTQ defined above must be started with the STRRMTWTR command.

The data to be printed must be associated with the defined OUTQ via the various PRTF commands.

10. PSF/400 AFP Printing Using TCP/IP

This chapter provides configuration guidelines for AS/400 using TCP/IP.
The versions differ somewhat in the setup.
If you are running <u>AS/400 version 3.1 or 3.6</u>, you should see section
13.1. If you are running <u>AS/400 version 3.2 or 3.7</u>, see section 13.2.

☞ *Requirements:*

Before IPDS printing using TCP/IP can be accomplished, the following
points need to be checked:

1. TCP/IP is installed and enabled
2. The relevant PTFs are applied
   (for AS/400 3.1 and 3.6 only)
3. The WRKAFP2 command is compiled
   (for AS/400 3.1 and 3.6 only)

Details on how to verify these items are supplied in a separate document
included on the documentation diskette.

💾 See the file: **AS400PTF**.

PSF/400 is also a pre-requisite for IPDS printing. IPDS printing is
however possible for a period of time as a license can be obtained.

Once the above conditions have been met, the parameters have been
configured. The basic TCP/IP installation of the *Xerox 4500 PS ETH IPC*
(IPDS) must also have been completed before direct AFP / IPDS from
PSF/400 will be possible.

NOTE:

* The Maximum Transmission Unit (MTU) of the IP packet size that can
  be used is 2000.

10.1 AS/400 version 3.1 and 3.6

This section describes the following configuration:

CRTDEVPRT samples
WRKAFP2 samples

10.1.1 CRTDEVPRT

Create a printer device description for version 3.1 or 3.6.

The value must be unique within the network.

When using TCP/IP support from PSF/400 version 3.1, the stated value is not used, but must be set to a unique name that is NOT used on your AS/400.

```
CRTDEVPRT DEVD(PRTPS123)
          DEVCLS(*RMT)
          TYPE(*IPDS)
          MODEL(0)
          AFP(*YES)
          AFPATTACH(*APPC)
          FONT (11)
          FORMFEED(*AUTOCUT)
          RMTLOCNAME(TCPIP)
          TEXT(Using TCP/IP support)
```

DEVCLS	*RMT is required
TYPE	*IPDS is required
MODEL	0 is required
AFP	*YES is required
AFPATTACH	*APPC is required
FONT	A value appropriate for the environment is required
FORMFEED	A value appropriate for the printer is required
RMTLOCNAME	Use any name that will not be used as a remote location name on the network.

NOTE:

This configuration of a printer device description is as if an APPC attachment is to be used.

10.1.2 Configuring WRKAFP2 for direct TCP/IP connection

```
WRKAFP2  DEVD (PRTPS123 )
         RETRY (2)
         TCPIP (*YES)
         RMTSYS ('192.0.110.21')
         PORT (5001)
         ACTTMR (170)
         INACTTMR (*NOMAX)
```

DEVD   This value must match the DEVD in the printer device description.

RETRY   Specifies the number of retry attempts to establish a session

TCPIP   This value must be set to *YES.

RMTSYS   An IP address or a host name may be used for this parameter. In this example, an IP address is used. When configuring the IP address parameter for the *Xerox 4500 PS ETH IPC*(IPDS), an IP address (and not a host name) must be used.

PORT   This value must match the value used for the *Xerox 4500 PS ETH* (IPDS) TCP port parameter. The Port no. 5001 is the default port number of the first IPDS port on the *Xerox 4500 PS ETH* (IPDS).

ACTTMR   This value specifies the number of seconds PSF/400 will wait for the *Xerox 4500 PS ETH*to respond to an activation request. If the printer does not respond within this period, PSF/400 will terminate.

INACTTMR This value specifies the length of time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.

NOTE: The values in the WRKAFP2 command vary slightly according to the PTF level and the operating system version.
              Consult the following document supplied on the diskette for details:

         AS400PTF

10.1.3 Setting the CHGTCPA

If your environment has a need to make certain that a TCP/IP attached device has not been powered off, you may use the TCP KEEP ALIVE parameter in CHGTCPA. This value used for this parameter determines how long PSF/400 will wait for a response from a device before terminating.

10.2 AS/400 version 3.2 and 3.7

This section describes the following configuration:

CRTDEVPRT samples
CRTPSFCFG samples (version 3.2 only)

10.2.1 CRTDEVPRT

Create a printer device (CRTDEVPRT) description for version 3.2 or 3.7.
Type the entry of choice and press Enter.

The value must be unique within the network.

```
Device description . . . . . . . . >  <  >          Name
Device class . . . . . . . . . . > *LAN            *LCL, *RMT, *VRT, *SNPT, *LAN
Device type  . . . . . . . . . . > *IPDS           3287, 3812, 4019, 4201...
Device model . . . . . . . . . . > 0               0, 1, 2, 3, 4, 10, 13, 301...
LAN attachment . . . . . . . . .   *IP             *LEXLINK, *IP, *USRDFN
Advanced function printing . . .   *YES            *NO, *YES
Port number  . . . . . . . . . .   5001            0-65535
Online at IPL . . . . . . . . .    *YES            *YES, *NO
Font:
  Identifier . . . . . . . . . .   11              3, 5, 11, 12, 13, 18, 19...
  Point size . . . . . . . . . .   *NONE           000.1-999.9, *NONE
Form feed  . . . . . . . . . . .   *TYPE           *TYPE, *CONT, *CUT, *AUTOCUT
Separator drawer . . . . . . . .   *FILE           1-255, *FILE
Separator program  . . . . . . .   *NONE           Name, *NONE
  Library  . . . . . . . . . . .                   Name, *LIBL, *CURLIB
Message queue  . . . . . . . . .   QSYSOPR         Name, QSYSOPR
  Library  . . . . . . . . . . .     *LIBL          Name, *LIBL, *CURLIB
 Activation timer . . . . . . . .   170            1-2550, *NOMAX
 Maximum pending requests . . . .   6              1-31
 Print while converting . . . . .   *YES           *NO, *YES
 Print request timer  . . . . . .   *NOMAX         1-3600, *NOMAX
 Form definition  . . . . . . . .   F1C10110       Name
  Library  . . . . . . . . . . .     *LIBL          Name, *LIBL, *CURLIB
 Remote location:
  Name or address  . . . . . . .   192.0.110.1
```

NOTE: The bolded entries are mandatory settings. The "Font Identifier" is not
mandatory in a strict PrintServer related configuration, but is necessary
for the system's own identification purposes.

PORT   This value must match the value used for the *Xerox 4500 PS ETH
IPC* (IPDS) TCP port parameter. The Port no. 5001 is the default port number
of the first IPDS port on the *Xerox 4500 PS ETH IPC*(IPDS).

10.2.2 CRTPSFCFG (version 3.2 only)

When the printer device has been created, you are to make the configuration for direct TCP/IP connection using PSF/400 running version 3.2. Below you will find a sample configuration.

```
Create PSF Configuration (CRTPSFCFG)


 PSF configuration  . . . . . . .                       Name
Library  . . . . . . . . . . .              *CURLIB      Name, *CURLIB
 User resource library list . .      *JOBLIBL     *JOBLIBL, *CURLIB, *PRTF...
 Device resource library list . .           *DFT             Name, *DFT
             + for more values
 IPDS pass through  . . . . . . .           *NO              *NO, *YES
 Activate release timer . . . . .           *NORDYF      *NORDYF, *IMMED...
 Release timer  . . . . . . . . .           *NOMAX           1-1440,          *NOMAX,
*SEC15...
 Restart timer  . . . . . . . . .           *IMMED           1-1440, *IMMED
 SNA retry count  . . . . . . . .           2                1-99, *NOMAX
 Delay time between SNA retries       0                   0-999
 Text 'description' . . . . . . .           *BLANK
                  Create PSF Configuration (CRTPSFCFG)


Type choices, press Enter.



                     Additional Parameters


Blank page . . . . . . . . . . .                *YES          *YES, *NO
Page size control  . . . . . . .                *NO           *NO, *YES
Resident fonts . . . . . . . . .                *YES          *YES, *NO
Resource retention . . . . . . .                *YES          *YES, *NO
Edge orient  . . . . . . . . . .                *NO           *YES, *NO
Remote location:
  Name or address  . . . . . . .                *192.0.110.1



TCP/IP port  . . . . . . . . . .                *NONE     1-65535, *NONE
TCP/IP activation timer  . . . .                170       1-2550, *NOMAX
Use outline fonts  . . . . . . .                *NO
*YES, *NO
```

11. AS/400 SCS Printing Using SNA

This chapter provides:

> AS/400 definitions for 3270 SCS printing

Once these parameters have been configured, and the basic SNA installation of the *Xerox 4500 PS ETH*(equipped with an FSL top module) has been completed, direct SCS print will be possible. This method enables printing of datasets that would have been printed on a 5256 twinax or 3287 coax attached printer.

If 3812-1 emulation is required then the TCP/IP connection described in the "AS/400 SCS/DCA Printing using TCP/IP" section, should be considered.

If AS/400 Host Print Transform is being used then the TCP/IP connection described in the "AS/400 Printing using TCP/IP LPR/LPD" section, should be considered.

If IPDS printing is required, the TCP/IP connection described in the chapter "PSF/400 AFP Printing Using TCP/IP" should be considered.

Requirements:
- *Xerox 4500 PS ETH*(equipped with an FSL top module) with 3270 emulation

11.1 AS/400 controller definition

The CRTCTLRWS command is used to create a Remote Work Station Controller.

The following example shows the values required to create a controller called PS3174.

```
          Create Ctl Desc (Remote WS) (CRTCTLRWS)

 Type choices, press Enter.

 Controller description . . . . . CTLD        > PS3174
 Controller type  . . . . . . . . TYPE        > 3174
 Controller model . . . . . . . . MODEL       > 0
 Link type  . . . . . . . . . . . LINKTYPE    > *LAN
 Online at IPL  . . . . . . . . . ONLINE        *YES
 Switched line list . . . . . . . SWTLINLST   > XXXXXXXXXX
                       + for more values
 Maximum frame size . . . . . . . MAXFRAME      *LINKTYPE
 Exchange identifier  . . . . . . EXCHID      > YYYYYYYY
 Initial connection . . . . . . . INLCNN        *DIAL
 Dial initiation  . . . . . . . . DIALINIT      *LINKTYPE
 LAN remote adapter address . . . ADPTADR     > ZZZZZZZZZZZZ
 Autocreate device  . . . . . . . AUTOCRTDEV    *ALL
 Text 'description' . . . . . . . TEXT        > 'SNA PS 23 in Sales'

 More... F9=All parameters   F11=Choices   F14=Command string   F24=More keys
```

The value XXXXXXXX used for SWTLINLST must be replaced by the name of the LAN adapter being used on the AS/400

The value YYYYYYYY used for EXCHID must be the same as the Block and ID Numbers of the *Xerox 4500 PS ETH.* The default value is 05D00000.

The value ZZZZZZZZZZZZ used for ADPTADR must be the same as the MAC address of the *Xerox 4500 PS ETH.* The default value is Universal MAC address indicated on the side of the *Xerox 4500 PS ETH.* The current value can be found on the first page of the test printout.

11.2 AS/400 printer definition

The CRTDEVPRT command is used to create a Printer device.

The following example shows the values required to create a printer called PS3287.

```
              Create Device Desc (Printer) (CRTDEVPRT)

 Type choices, press Enter.

 Device description . . . . . . . DEVD         > PS3287
 Device class . . . . . . . . . . DEVCLS       > *RMT
 Device type  . . . . . . . . . . TYPE         > 3287
 Device model . . . . . . . . . . MODEL        > 0
 Local location address . . . . . LOCADR       > 02
 Online at IPL  . . . . . . . . . ONLINE         *YES
 Attached controller  . . . . . . CTL          > PS3174
 Separator program  . . . . . . . SEPPGM         *NONE
   Library  . . . . . . . . . . .
 Printer error message  . . . . . PRTERRMSG      *INQ
 Message queue  . . . . . . . . . MSGQ           QSYSOPR
   Library  . . . . . . . . . . .                 *LIBL
 Application type . . . . . . . . APPTYPE        *NONE
 Text 'description' . . . . . . . TEXT         > '3287 Printer in sales'



 More...
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display   F24=More
 keys
```

The value PS3174 used for CTL must match the name given in the CTLD parameter in the Controller definition made on the previous page.

11.3 AS/400 printing

Once the above definitions have been made the devices should be varied on and printing can be accomplished in the normal way.

12. AS/400 SCS-DCA Printing Using TCP/IP

This chapter provides:

AS/400 definitions for SCS/DCA printing

Once these parameters have been configured, and the basic TCP/IP installation of the *Xerox 4500 PS ETH*(equipped with an FSL top) has been completed, direct SCS/DCA will be possible. This will off-load the AS/400 as Host Print Transform is not used.

Requirements:
- AS/400 version 3.1 or higher with TCP/IP installed and a TCP/IP configured *Xerox 4500 PS ETH*(equipped with an FSL top) with 5250 emulation

12.1 Create a remote output queue

The CRTOUTQ command is used to create a Remote output queue. This will enable the AS/400 to automatically output SCS/DCA data directly to an *Xerox 4500 PS ETH*(equipped with an FSL top).

The following example shows the values required to create queue called PS23OUTQ.

```
                      Create Output Queue (CRTOUTQ)

Type choices, press Enter.


Output queue . . . . . . . . . . OUTQ          > PS23OUTQ
  Library  . . . . . . . . . . .                *CURLIB
Maximum spooled file size:        MAXPAGES
  Number of pages  . . . . . . .                *NONE
  Starting time  . . . . . . . .
  Ending time  . . . . . . . . .
                        + for more values
Order of files on queue  . . . . SEQ           *FIFO
Remote system  . . . . . . . . . RMTSYS        > *INTNETADR



Remote printer queue . . . . . . RMTPRTQ       > LPDPRT1SCS



Writers to autostart . . . . . . AUTOSTRWTR    > 1
```

The value LPDPRT1SCS used for RMTPRTQ must match the SCS printer queue defined in the *Xerox 4500 PS ETH*(equipped with an FSL top).
The default value is LPDPRT1SCS.

```
                    Create Output Queue (CRTOUTQ)

 Type choices, press Enter.

 Queue for writer messages  . . . MSGQ          QSYSOPR
   Library  . . . . . . . . . .                   *LIBL
 Connection type  . . . . . . . . CNNTYPE     > *IP
 Destination type . . . . . . . . DESTTYPE    > *OS400
 Transform SCS to ASCII . . . . . TRANSFORM   > *NO
 Internet address . . . . . . . . INTNETADR     XXX.XXX.XXX.XXX
 Destination options  . . . . . . DESTOPT       *NONE


 Text 'description' . . . . . . . TEXT          SCS/DCA Outq PS32 Sales PrintServer

 More...
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display    F24=More keys
```

The value *IP must be used for CNNTYPE
The value *OS400 must be used for DESTTYPE
The value *NO must be used for TRANSFORM

The value XXX:XXX:XXX:XXX used for INTNETADR must be the same as the
IP address of the *Xerox 4500 PS ETH.*

12.2 AS/400 Printing

This method of printing supports various printer emulations.
For **Laser printers**, all non-IPDS emulations are supported.
Matrix printers support the traditional IBM matrix emulations.

When printing from OFFICE/400 care must be taken when submitting data to
be printed. The printer defined in the Print Option menu panel of
OFFICE/400 must have a similar emulation to the printer defined in the
OUTQ parameter.

In order to print to the *Xerox 4500 PS ETH* (equipped with an FSL top), the
OUTQ defined above must be started with the STRRMTWTR command.

13. PSF/MVS AFP Printing Using TCP/IP

This chapter provides:

> JES installation statements
> PSF Startup Procedures

Once these parameters have been configured, and the basic TCP/IP installation of the *Xerox 4500 PS ETH IPC*(equipped with an IPDS top) has been completed, direct AFP / IPDS from PSF / MVS will be possible.

☞ ***Requirements:***
- use of PSF/MVS version 2.2.0 with PTF level UW21345

MTU size
- The Maximum Transmission Unit (MTU) of the IP packet for the MVS system is *recommended* to be set up to 2000.

NOTE: The MTU size should not exceed the maximum size sent through the control unit. Failure may lead to transmission problems.

13.1 PSF/MVS direct attachment

Sample PSF/MVS JES2 initialisation statements

```
FSSDEF(FSS1)PROC=PSF4,HASPFSSM=HASPFSSM
```

```
PRT420,FSS=FSS1,MODE=FSS,PRMODE=(LINE,PAGE),
       CLASS=A,UCS=0,SEP,NOSEPDS,CKPTPAGE=100,
       DRAIN,WS=(R,Q/FCB)
```
Example of PSF/MVS JES2 printer definition

13.2 PSF/MVS startup procedure

```
000001 //PSF4    PROC
000002 //STEP01 EXEC PGM=APSPPIEP,REGION=1750K
000003 //JOBHDR OUTPUT PAGEDEF=V06483,          /* JOB SEPARATOR PAGEDEF    */
000004 //       FORMDEF=A10110,CHARS=GT15       /* JOB SEPARATOR FORMDEF    */
000005 //JOBTLR OUTPUT PAGEDEF=V06483,          /* JOB SEPARATOR PAGEDEF    */
000006 //       FORMDEF=A10110,CHARS=GT15       /* JOB SEPARATOR FORMDEF    */
000007 //DSHDR  OUTPUT PAGEDEF=V06483,          /* DS  SEPARATOR PAGEDEF    */
000008 //       FORMDEF=A10120,CHARS=GT15       /* DS  SEPARATOR FORMDEF    */
000009 //MSGDS  OUTPUT PAGEDEF=A06462,          /* MESSAGE DATASET PAGEDEF  */
000010 //       FORMDEF=A10110                  /* MESSAGE DATASET FORMDEF  */
000011 //****************************************************************
000012 //*
000013 //*     THIS PROC. IS TO BE USED FOR 300 DPI DEVICES
000014 //*                     ----------
000015 //****************************************************************
000016 //FONT01 DD DSN=IDAPBJ.AFPLIB,DISP=SHR   /* PBJ   FONTS - 300 DPI   */
000017 //       DD DSN=SYS2.FONT300,DISP=SHR    /* SYSTEM FONTS - 300 DPI  */
000020 //*------------------------------------------------------------
000021 //PSEG01 DD DSN=IDAPBJ.AFPLIB,DISP=SHR   /* SYSTEM PAGE SEGMENTS    */
000022 //       DD DSN=SYS2.PSEGLIB,DISP=SHR    /* SYSTEM PAGE SEGMENTS    */
000023 //       DD DSN=SYS1.PSEGLIB,DISP=SHR    /* SYSTEM PAGE SEGMENTS    */
000024 //*------------------------------------------------------------
000025 //OLAY01 DD DSN=IDAPBJ.AFPLIB,DISP=SHR   /* SYSTEM MEDIUM OVERLAYS  */
000026 //       DD DSN=SYS2.OVERLIB,DISP=SHR    /* SYSTEM MEDIUM OVERLAYS  */
000027 //       DD DSN=SYS1.OVERLIB,DISP=SHR    /* SYSTEM MEDIUM OVERLAYS  */
000028 //*------------------------------------------------------------
000029 //PDEF01 DD DSN=SYS2.PDEFLIB,DISP=SHR    /* SYSTEM PAGEDEFS         */
000030 //       DD DSN=SYS1.PDEFLIB,DISP=SHR    /* SYSTEM PAGEDEFS         */
000031 //*------------------------------------------------------------
000032 //FDEF01 DD DSN=SYS2.FDEFLIB,DISP=SHR    /* SYSTEM FORMDEFS         */
000033 //       DD DSN=SYS1.FDEFLIB,DISP=SHR    /* SYSTEM FORMDEFS         */
000034 //****************************************************************
000035 //*           STANDARD                  PRINTDEV                 */
000036 //****************************************************************
000037 //PRT420 CNTL
000038 //PRT420 PRINTDEV FONTDD=*.FONT01,    /* FONT    LIBRARY DD       */
000039 //       OVLYDD=*.OLAY01,             /* OVERLAY  LIBRARY DD      */
000040 //       PSEGDD=*.PSEG01,             /* SEGMENT  LIBRARY DD      */
000041 //       PDEFDD=*.PDEF01,             /* PAGEDEF  LIBRARY DD      */
000042 //       FDEFDD=*.FDEF01,             /* FORMDEF  LIBRARY DD      */
000043 //       JOBHDR=*.JOBHDR,             /* JOB HEADER SEPARATOR OUTPUT */
000044 //       JOBTRLR=*.JOBTLR,            /* JOB TRAILER SEPARATOR OUTPUT */
000045 //       DSHDR=*.DSHDR,               /* DATA SET HEADER SEPERATOR  */
000046 //       MESSAGE=*.MSGDS,             /* MESSAGE DATA SET OUTPUT   */
000047 //       PAGEDEF=A06462,              /* DEVICE PAGEDEF DEFAULT    */
000048 //       FORMDEF=A10110,              /* DEVICE FORMDEF DEFAULT    */
000049 //       CHARS=(GT10,                 /* DEVICE                    */
000050 //       GT12,GT15,GT10),             /* DEFAULT FONT SET          */
000051 //       PIMSG=YES,                   /* ACCUMULATE DATA SET MESSAGES */
000052 //       DATACK=BLOCK,                /* REPORT ALL DATA-CHECK ERRORS */
000053 //       TRACE=NO,                    /* CREATE INTERNAL TRACE     */
000054 //       FAILURE=WCONNECT,            /* ACTION ON PRINTER FAILURE */
000055 //       TIMEOUT=REDRIVE,             /* PSF ACTION ON TIMEOUT     */
000056 //       DISCINTV=0,                  /* DISCONNECT INTERVAL IN SECS. */
000057 //       MGMTMODE=IMMED,              /* ACTIVATE PRINTER AT STARTUP */
000058 //       IPADDR='192.0.110.21'    /* IP ADDRESS                   */
000059 //       PORTNO=5001              /* IP ADDRESS                   */
000060 //PRT420 ENDCNTL
```

Using IP address 192.0.110.21 and port number 5001

The IP address of the *Xerox 4500 PS ETH IPC*(IPDS) should be programmed in the
IPADDR statement. The PORTNO 5001 is the default port number of the first IPDS
port on the *Xerox 4500 PS ETH IPC*(IPDS).

14. SNA IPDS and SCS Printing from MVS or VM

This chapter provides:

- sample LU1 printer logmode definitions for SCS and IPDS print

- sample definitions for installation in association with a locally attached 3174 and 3745

- sample definitions for installation in association   with a locally attached 3174 and a downstream OS/2 gateway.

- method of configuring a Novell SAA gateway so as to attach an PS as a PU type 2.

- notes on use of FSL configuration

Once these definitions have been configured, performing direct printing via SNA will be possible.

☞ *Requirements*:
- *Xerox 4500 PS ETH* (equipped with FSL top) with 3270 code for SCS printing .
- *Xerox 4500 PS ETH IPC* (IPDS) for IPDS printing.

14.1 Logmode

The *Xerox 4500 PS ETH* uses standard IBM LU1 printer logmodes. Please refer to your IBM VTAM documentation for particular configurations that best meet your network requirements. Two sample definitions are listed below:

IPDS printer:	SCS printer:
| ```
IPDSPSF1 MODEENT  LOGMODE=IPDSPSF1,
FMPROF=X'03',                     X
TSPROF=X'03',                     X
PRIPROT=X'B1',                    X
SECPROT=X'B0',                    X
COMPROT=X'7080',                  X
SRCVPAC=X'02',                    X
RUSIZES=X'85C7',                  X
SSNDPAC=X'00',                    X
PSNDPAC=X'02',                    X
PSERVIC=X'0140000100000000001000000'
``` | ```
RSCSPRT1 MODEENT  LOGMODE=RSCSPRT1,
FMPROF=X'03',                     X
TSPROF=X'03',                     X
PRIPROT=X'B1',                    X
SECPROT=X'30',                    X
COMPROT=X'7080',                  X
SSNDPAC=X'00',                    X
SRCVPAC=X'00',                    X
RUSIZES=X'8787',                  X
PSNDPAC=X'80',                    X
PSERVIC=X'01000000E100000000000000'
``` |

14.2 PS PU definition for 3174

Sample definition for installation in association with a locally attached 3174.

VTAM definition

```
V1SNA1C2  VBUILD TYPE=LOCAL
*
* LOCAL SNA 3174
*
V1LS1C2  PU     CUADDR=3C3,                                          X
                DLOGMOD=D4A32782,                                    X
                PACING=3,                                            X
                VPACING=3,                                           X
                MAXBFRU=10,                                          X
                SSCPFM=USSSCS,                                       X
                USSTAB=VUSSTAB,                                      X
                LOGTAB=VMODETAB,                                     X
                MODETAB=VMODETAB
*
* SINGLE TOKEN RING DEVICE WITH ID=40005A0001C2
*
IDS1C2P1 LU    LOCADDR=02,DLOGMOD=RSCSPRT1,PACING=0,MODETAB=RSCSTAB, X
               USSTAB=VUSSTAB1,VPACING=3
```

3174 Definition

```
*************************************************************************
* LOCAL TOKEN RING DEFINITION 3174

* CHANNEL ADDRESS 1C1-1C8
* 3174 /11L Microcode EC=A78831 ML=90095
* Prompt 900 - 400031740001        * Token-Ring Gateway Address
*
* Prompt 940                       * Token-Ring Assignment
*         C1 - 40005A0001C1
*         C2 - 40005A0001C2
*         C3 - 40005A0001C3
* Prompt 941                       * Token-Ring Address Configuration
*                         SAP      F       W
*         C1 - 40005A00001C1   4        3       3
*         C2 - 40005A00001C2   4        3       3
*         C3 - 40005A00001C3   4        3       3
```

PrintServer Definition file extract

```
&&??##N1,0#      ; Start of file - Don't remove this !
;----------------------------------------------------------------------
;    Configuration for the TokenRing PrintServer
;    (This is an example. Please modify the parameters to match
;    your configuration).
;    00824001
;----------------------------------------------------------------------
;**********************************#************************************
;                               I D A P S
;**********************************#************************************
BEGIN_CONFIGURATION     IDAPS
        LOCAL_MAC          40005A0001C2; Set LOCAL MAC-address
        SEL_MAC            LOCAL        ; Use universal MAC-address
        EARLY_TOKEN        YES          ; Early Token Release DISABLED.
        ENABLE_TCPIP       YES          ; ENABLE TCP/IP protocol.
        ENABLE_NETWARE     YES          ; ENABLE Netware protocol .
        ENABLE_802_2       YES          ; ENABLE 802.2 protocol .
        ENABLE_PU_LU       YES          ; ENABLE PU/LU protocol.
        BOOT               YES          ; Reboot PS if conf. has changed.
        SHARETIMEOUT       20           ; Share timeout (sec.)
        HOLDTIMEOUT        600          ; Timeout for OFFLINE c ondition (sec.)
        IRQTIMEOUT         60           ; Timeout for IRQ forwarding (Sec.)
  END


;**********************************#************************************
;                               T C P I P
;**********************************#************************************
BEGIN_CONFIGURATION TCPIP
        HOSTNAME           "idaPS005"   ; The TCP/IP host name of the PS
        BOOTP              NO           ; Boot from BOOTP server
        TCP_MSS            1400         ; Message Segment Size
        TCP_WINDOW         4200         ; Receive window
        DEFAULT_IP         192.0.16.12  ; IP-address if not booted by BOOTP
        DEFAULT_SM         255.255.0.0  ; Subnet Mask if not booted by BOOTP
        DEFAULT_GW         192.0.16.3   ; Gateway addr. if not booted by BOOTP
END


;**********************************#************************************
;                               P U
;**********************************#************************************
BEGIN_CONFIGURATION PU
        BLOCKNUMBER  05D          ; Fill in your Block number
        IDNUMBER     00000        ; Fill in your ID number
        REMOTE_MAC   400031740001; Fill in HOST / GW MAC address
        LOCAL_SAP    4           ; Fill in your local SAP value
        REMOTE_SAP   4           ; Fill in your HOST SAP value
END

&&??
```

14.3 3174 - OS/2 Gateway - PS PU definition

Sample definition for installation in association with a locally attached 3174 and a
downstream OS/2 gateway

3174 and OS/2 VTAM definition

```
V1SNA1C3  VBUILD TYPE=LOCAL
*
* LOCAL SNA 3174
*
V1LS1C3   PU     CUADDR=3C3,                                              X
                 DLOGMOD=D4A32782,                                        X
                 PACING=3,                                                X
                 VPACING=3,                                               X
                 MAXBFRU=10,                                              X
                 SSCPFM=USSSCS,                                           X
                 USSTAB=VUSSTAB,                                          X
                 LOGTAB=VMODETAB,                                         X
                 MODETAB=VMODETAB
*
* SINGLE TOKEN RING PC WITH ID=40005A0001C3 TEST'S
*
IDS1C3D0 LU     LOCADDR=02,DLOGMOD=D4A3290,LOGAPPL=VM
IDS1C3P0 LU     LOCADDR=03,DLOGMOD=IPDSLU62,PACING=0,MODETAB=RSCSTAB,    X
                USSTAB=VUSSTAB1,VPACING=3
IDS1C3P1 LU     LOCADDR=04,DLOGMOD=IPDSLU62,PACING=0,MODETAB=RSCSTAB,    X
                USSTAB=VUSSTAB1,VPACING=3
IDS1C3P2 LU     LOCADDR=05,DLOGMOD=RSCSPRT1,PACING=0,MODETAB=RSCSTAB,    X
                USSTAB=VUSSTAB1,VPACING=3
```

3174 Definition

```
***************************************************************************
* LOCAL TOKEN RING DEFINITION 3174

* CHANNEL ADDRESS 1C1-1C8
* 3174 /11L Microcode EC=A78831 ML=90095
* Prompt 900 - 400031740001        * Token-Ring Gateway Address
*
* Prompt 940                       * Token-Ring Assignment
*       C1 - 40005A0001C1
*       C2 - 40005A0001C2
*       C3 - 40005A0001C3
* Prompt 941                       * Token-Ring Address Configuration
*                       SAP    F     W
*       C1 - 40005A00001C1   4     3     3
*       C2 - 40005A00001C2   4     3     3
*       C3 - 40005A00001C3   4     3     3
```

OS/2 Protocol.ini definitions

```
[LANDD_nif]

  DriverName = LANDD$
  Bindings = OLITOKCE_nif
  NETADDRESS = "40005a0001C3"
  ETHERAND_TYPE = "I"
```

OS/2 CM/2 gateway definitions

```
  DEFINE_LOCAL_CP    FQ_CP_NAME(DKIDTN01.LT)
                     CP_ALIAS(LT)
                     NAU_ADDRESS(INDEPENDENT_LU)
                     NODE_TYPE(EN)
                     NODE_ID(X'05D00000')
                     NW_FP_SUPPORT(NONE)
                     HOST_FP_SUPPORT(YES)
                     HOST_FP_LINK_NAME(HOST0001)
                     MAX_COMP_LEVEL(NONE)
                     MAX_COMP_TOKENS(0);

  DEFINE_LOGICAL_LINK   LINK_NAME(HOST0001)
                        ADJACENT_NODE_TYPE(LEARN)
                        DLC_NAME(IBMTRNET)
                        ADAPTER_NUMBER(0)
                        DESTINATION_ADDRESS(X'40003174000104')
                        ETHERNET_FORMAT(NO)
                        CP_CP_SESSION_SUPPORT(YES)
                        ACTIVATE_AT_STARTUP(NO)
                        LIMITED_RESOURCE(USE_ADAPTER_DEFINITION)
                        LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
                        SOLICIT_SSCP_SESSION(YES)
                        MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
                        USE_PUNAME_AS_CPNAME(NO)
                        EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
                        COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
                        COST_PER_BYTE(USE_ADAPTER_DEFINITION)
                        SECURITY(USE_ADAPTER_DEFINITION)
                        PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
                        USER_DEFINED_1(USE_ADAPTER_DEFINITION)
                        USER_DEFINED_2(USE_ADAPTER_DEFINITION)
                        USER_DEFINED_3(USE_ADAPTER_DEFINITION);

  DEFINE_LOGICAL_LINK   LINK_NAME(L1C302)
                        ADJACENT_NODE_TYPE(LEARN)
                       DLC_NAME(IBMTRNET)
                        ADAPTER_NUMBER(0)
                        DESTINATION_ADDRESS(X'40005A01C30204')
                        ETHERNET_FORMAT(NO')
                     ....

  DEFINE_GATEWAY_WORKSTATION WORKSTATION_LINK_NAME(L1C302)
                             WORKSTATION_LU(WORKSTATION_LU_NAME(L1C302)
                                 HOST_LINK_NAME(HOST0001)
                                 NAU_ADDRESS_AT_WORKSTATION(2)
                             NAU_ADDRESS_AT_HOST(5));
```

PrintServer Definition file extract

```
&&??##N1,0#       ; Start of file - Don't remove this!
;------------------------------------------------------------- ----------------
;     Configuration for the TokenRing PrintServer x3
;     (This is an example. Please modify the parameters to match
;     your configuration).
;     00824001
;-----------------------------------------------------------------------------
;*******************************************#*********************************
```

```
;                                    I D A P S
;******************************************#*********************************
BEGIN_CONFIGURATION      IDAPS
        LOCAL_MAC           40005A01C302; Set LOCAL MAC-address
        SEL_MAC             LOCAL          ; Use universal MAC-address
        EARLY_TOKEN         YES            ; Early Token Release DISABLED.
        ENABLE_TCPIP        YES            ; ENABLE TCP/IP protocol.
        ENABLE_NETWARE      YES            ; ENABLE Netware protocol.
        ENABLE_802_2        YES            ; ENABLE 802.2 protocol.
        ENABLE_PU_LU        YES            ; ENABLE PU/LU protocol.
        BOOT                YES            ; Reboot PS if conf. has changed.
        SHARETIMEOUT        20             ; Share timeout (sec.)
        HOLDTIMEOUT         600            ; Timeout for OFFLINE condition (sec.)
        IRQTIMEOUT          60             ; Timeout for IRQ forwarding (Sec.)
END
;******************************************#*********************************
;                                    T C P I P
;******************************************#*********************************
BEGIN_CONFIGURATION TCPIP
        HOSTNAME            "idaPS0006"    ; The TCP/IP host name of the PS
        BOOTP               NO             ; Boot from BOOTP server
        TCP_MSS             1400           ; Message Segment Size
        TCP_WINDOW          4200           ; Receive window
        DEFAULT_IP          192.0.16.12    ; IP-address if not booted by BOOTP
        DEFAULT_SM          255.255.0.0    ; Subnet Mask if not booted by BOOTP
        DEFAULT_GW          192.0.16.3     ; Gateway addr. if not booted by BOOTP
END
;******************************************#*********************************
;                                    P U
;******************************************#*********************************
BEGIN_CONFIGURATION PU
        BLOCKNUMBER    05D          ; Fill in your Block number
        IDNUMBER       12345        ; Fill in your ID number
        REMOTE_MAC     40005A0001C3; Fill in HOST / GW MAC address
        LOCAL_SAP      4            ; Fill in your local SAP value
        REMOTE_SAP     4            ; Fill in your HOST SAP value
END

&&??
```
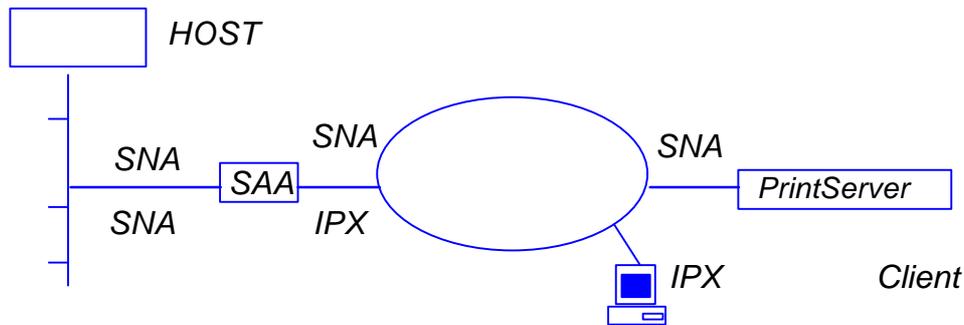
14.4 Configuring NetWare SAA gateway for direct SNA connection to PS

The following will describe the normal procedures for configuring the PS to a NetWare for SAA Gateway version 2.0. The main advantage for this type of connection is that the print application on the mainframe has direct printer control through VTAM.

NOTE Most NetWare SAA installations use the IPX/SPX protocol as downstream protocol for the workstations. The PS supports the IPX/SPX protocols, but currently **not** for SNA traffic. The downstream protocol for the *Xerox 4500 PS ETH* <u>must</u> be 802.2 SNA. If you wish to use the IPX/SPX protocol for downstream printing, you will need a 3270 print emulation package on the NetWare server.

When is a network node or PU **Downstream or Upstream?**
This may cause some confusion, but is important to know when configuring the SAA gateway.
In the above example, the following is true:

1. The host is an upstream node and PU to the SAA gateway.
2. The SAA gateway is a downstream node and PU to the host.
3. The SAA gateway is an upstream node and PU to the *Xerox 4500 PS ETH.*
4. The PS is a downstream node and PU to the SAA gateway.
5. The SAA gateway is an upstream node to the NetWare client, but PU definitions are not used on the client since the protocol used is IPX. Other protocols could have been TCP/IP.
6. The NetWare Client is a downstream node to the SAA gateway, but downstream link and downstream PU definitions are not used since the protocol used is IPX.

When configuring the SAA environment, the host will always be an upstream PU and the *Xerox 4500 PS ETH* will always be a downstream PU.

The following definitions are based on an assumption that the SAA server is already up and running. If this is not the case, please refer to the appropriate NetWare documentation before proceeding with the following.

1. Log in to the NetWare server running NetWare for SAA as supervisor.

2. Run SYSTEM\CSCON\cscon.exe and choose the appropriate SAA server. It is also possible to configure via SAA Administrator for Windows.

3. Choose **Configure Data Link Adapters.**

   You will now be able to choose between one or more adapters. Note the name of the adapter that should be used when communicating from the SAA gateway to the *Xerox 4500 PS ETH*, i.e. the adapter used for the same physical network as the *Xerox 4500 PS ETH* connects to.

   If only one adapter is listed, ***you may have to create the missing adapter***. Unless this is done, the *Xerox 4500 PS ETH has to be located on the same LAN as the upstream node*. In an installation resembling the figure above, this means that the *Xerox 4500 PS ETH* can only be found by SAA on the Ethernet side, NOT on the Token Ring side. Names and numbers for network adapters can be found in the autoexec.ncf file on the same server.

   The entries look like this:

   load TOKEN name=TOKEN_IP port=A20 int=2 frame=TOKEN-RING_SNAP

   load 3c5x9 port=300 frame=ETHERNET_802.2 name=ETHER1

   To create the missing adapter:
   a) Press <Insert>
   b) Type <Name> (i.e. ETHERNET) <Enter>
   c) Choose <adapter type> (i.e. Token Ring) <enter>
   d) Type <Number> (note that each adapter needs a separate number)
   e) Press <ESC>
   f) Choose <YES> to create **Data Link Adapter Definition**

4. Choose **Configure for Host Connections**

   You can now use an existing PU profile or you can add a new profile. Multiple PU profiles can be active at the same time. This configures the connection to the Host. The following describes the creation of a new PU profile.

   a) Press <Insert>
   b) Enter <New Profile Name> e.g. IDAPROF

c) Press <Enter> on <Configure default LU attributes>
d) Select:
    Dedicated
    Printer
    <VTAM LU Name Prefix> (the name defined in VTAM)
    <Hex> or <Decimal> (system dependant)
    <ESC>
e) Enter <Starting dependent LU address>
    (Make sure that the number is not already i n use by the existing profile)
f) Enter <Number of dependent LUs>
    (This number should reflect the number of *Xerox 4500 PS ETHs* that
    will connect to this SAA gateway. Each *Xerox 4500 PS ETH* uses
    one LU)
g) Enter the rest of the parameters. They should be copied from the
    existing PU profile.
h) **NOTE**
    The value for '802.2 Local Service Access Point' must be defined in the
    Xerox 4500 PS ETH as 'Remote SAP'.
    The value for 'node id' must be defined in the *Xerox 4500 PS ETH*
    as 'Block number' (first three digits) and 'ID number' (last five digits).
i) Press <ESC> and choose <YES> to create a new PU profile

5. Choose **Configure Downstream PUs**

This is where you actually define each of the *Xerox 4500 PS ETHs* to the SAA
gateway.
Each *Xerox 4500 PS ETH* is considered a PU.

a) Press <insert>
b) Enter <downstream PU name> (e.g. ida01)
c) Enter <downstream LU address> (always 02)
d) Enter <Number of downstream LUs> (always 1)
e) Enter <Logical Adapter Name> (the name of the SAA logical adapter
    that should be used to communicate with the *Xerox 4500 PS ETH* In
    the above figure it would be the Token Ring adapter. If you have
    created a new **Data Link Adapter** in step 3), this is the one.
f) Enter <MAC address> and <802.2 remote node address> (The MAC
    address of the *Xerox 4500 PS ETH*)
g) Leave the rest of the parameters at default value, press <ESC> and
    choose <YES> to create a downstream PU.
h) **NOTE**:
    The <802.2 remote service access point> is the 'Local SAP' in the *Xerox 4500
    PS ETH*.

6. Choose **Configure LUs for Downstream PUs**

a) Press <enter> on the highlighted line showing: 002 (0x02)
b) Choose <Host PU profile>

      (If you have created a new PU profile in main step 4) you should choose
      this one, e.g. IDAPROF. If not, choose the existing PU profile)

  c) Choose the LU to be used by the first *Xerox 4500 PS ETH*
  d) Press <ESC> three times

You have now completed the configuration of the NetWare SAA Gateway.
To activate the new configuration, please restart the SAA gateway. This is
done by issuing the following command from an RCONSOLE session:

unload nwsaa
load nwsaa

In most cases it will also be necessary to restart the SAA gateway in
VTAM. This is done by issuing the following commands on the host
operator console:

V NET,INACT,ID=puname,F
V NET,ACT,ID=puname

Hints

1. Start the cscon.exe program and do the following:

    choose <configure for host connections>
    choose <configure host PU profiles>
    choose <configure for host connections>
    select the profile for the *Xerox 4500 PS ETH*
    choose <configure dependant LUs>

    In the panel displayed you should now have the following:

    002 (0x02) Printer   **luname** No Mapped: **puname**

    The luname is the name defined for the VTAM printer, defined in step 6..
    The category MUST be 'mapped'
    The 'puname' MUST be the name of the downstream PU defined in step 5.
    If the above is not true, you need to reconfigure your definitions.
    The above information can also be found using CSTATUS.

2. When starting NWSAA, the following message should be on the
   NWSAA console:

    3-10-96 22.28.08   NWSAA-7.0-2100BD [SNACP] Informational
    A link definition to remote LLC8022 node 00036e001cfb-04 on adapter
    ETHERNET1 has been opened.
    where

00035e001cfb is the MAC address for the *Xerox 4500 PS ETH* and ETHERNET1 is the name of the downstream link.

If the above is not true, you need to reconfigure your definitions.

14.5 FSL Configuration

The FSL top can be configured using FSL from the host.

FSL Configuration

FSL support will be as on the standard i-data PCL platform with the exception of non-relevant coax line functions which will be received but ignored.

Please observe that the LU1 language power-on default value '0' (download language from controller) is not supported. The consequence of this is that the national language has to be set (FSL function Y8).

For details, see the separate file: **FSL_REF.PDF**

15. PSS/MVS AFP Printing Using TCP/IP

This chapter provides:

> JES installation statements
> PSS Startup Procedure
> PSS Printer Profile

Once these parameters have been configured and the basic TCP/IP installation of the *PrintServer* (non-IPDS) has been completed, direct AFP/ICDS from PSS / MVS will be possible.

☞ ***Requirements:***
- use of ida PSS, version 6.01 or higher
- use of TCP/IP for MVS, version 2, release 1

MTU size

Gateway statement for TCP/IP profile

- The Maximum Transmission Unit (MTU) of the IP packet for the MVS system is *recommended* to be set up to 2000.

NOTE: The MTU size should not exceed the maximum size sent through the control unit. Failure may lead to transmission problems.

15.1 Sample PSS/MVS JES2 initialisation statements

```
FSSDEF(PSS4) PROC=PSS4,HASPFSSM=HASPFSSM
```

```
/* From the system PARMLIB
PRT410,CLASS=A,DRAIN,MODE=FSS,ROUTECDE=PSS410,FSS=PSS4
      PRMODE=(LINE,PAGE),UCS=0,WS=(W,R,Q/F)

PRT411,CLASS=A,DRAIN,MODE=FSS,ROUTECDE=PSS411,FSS=PSS4
      PRMODE=(LINE,PAGE),UCS=0,WS=(W,R,Q/F)
```
Example of PSS/MVS JES2 printer definition

15.2 PSS printer profile using TCP/IP attachment

```
*TCPIP DEFINITIONS
TCPIP    USER=TCPIP
NAMESRV  IP=192.0.15.0
NAMESRV  IP=192.0.14.1
*-------------------------------------------------------------------
* PSS PRINTER DEFINITION FOR USE WITH DIRECT TCP/IP CONNECTION
*-------------------------------------------------------------------
PRINTER  PRTID=PRT411,IP=192.0.110.21,
         LOGDD=CONSOLE,
         TIMEOUT=255,
         RETRY=10,
         PORT=5005
*-------------------------------------------------------------------
```

Example of PSS printer profile using TCP/IP

The IP address of the *PrintServer* (non-IPDS) should be programmed in the IP statement. The Port no. 5005 is the default port number of the first ICDS port on the *PrintServer* (non-IPDS as well as IPDS) products.

16. PSS/VM AFP Printing Using TCP/IP

This chapter provides:

PSS VM printer profile statements

Once these parameters have been configured, and the basic TCP/IP installation of the *PrintServer* (non-IPDS) has been completed, direct AFP/ICDS from PSS / VM will be possible.

☞ ***Requirements***:
- use of ida PSS, version 6.01 or higher
- use of TCP/IP for VM, version 2, release 2.1

16.1 Sample PSS VM printer profile definition using TCP/II

```
KEY         KEY=12345678901234567890
CONSLOG     NO
*******************TCP/IP DEFINITIONS*******************
*
TCPIP       USER=TCPIP
NAMESERV    IP=192.0.15.0
NAMESERV    IP=192.0.15.1
*
*******************DEFAULT DEFINITIONS *******************
*
DEFAULT     PDELIB=PDEF38PP,OVLYLIB=OVLY38PP,
            FONTLIB=FONT300,PSEGLIB=PSEG38PP,
            PDEFLIB=PDEF38PP, COMPRESS,SCALE,
            RESOURCE=,FONT=PR12,PAGEDEF=DEFAULT,
            XSIZE=8,YSIZE=11,XOFFSET=0,YOFFSET=0
            HPDEF=P1HEAD,HFDEF=F1HEAD,
            TPDEF=P1HEAD,TFDEF=F1HEAD,
            BINM=2
`
*******************TCP/IP ATTACHMENT*******************
*
PRINTER     PRTID=NET022,IP=192.0.118.2,PORT=5005
*
*********************************************************
```

The IP address of the *PrintServer (non-IPDS)* should be programmed in the IP statement. The Port no. 5005 is the default port number of the first ICDS port on the *PrintServer* (non-IPDS as well as IPDS) products.

17. PSF/2 AFP Printing Using TCP/IP

This chapter provides details on how to:

Create an IPDS printer profile
Setup the "Keep Alive" TCP/IP feature

☞ *Requirements:*

Before IPDS printing using TCP/IP can be accomplished, the following points need to be checked:

1. OS/2 2.0 with APAR IR28716 or later version must be installed.

2. TCP/IP 2.0 with CSD UN64092 or later version must be installed

3. PSF/2 1.10 with CSD UR41102 or later version must be installed

Once the above conditions have been met and the basic TCP/IP installation of the *PrintServer* (IPDS) been completed before direct AFP/IPDS from PSF/2 will be possible.

17.1 Creating a new printer profile

From the PSF/2 control panel you make the following selections:

1. Select **Profile**

2. Select **New**

The following panel will appear:

Create New Profile

3. Enter the **Device Name**

4. Select **Resolution** 240 or 300 according to the resolution of emulation used on the *PrintServer* (IPDS).

5. Select **TCP/IP** in the menu "Attachment Type"

6. Click on **Settings** (see figure in the following)

Select Settings

7. Enter **IP Address**
Enter the IP address of the *PrintServer* (IPDS)*.*

8. Select **Port Number**
    If the output device is attached to PARALLEL 1 of the print server, then select TCP/IP port number 5001. The value 5002 may also be used. The value chosen must match the value defined for the session in the *PrintServer* (IPDS)

9. Select **OK**

10. Select **Create**

The device created can be used with PSF/2 direct and with PSF/2 DPF printing methods.

17.2 KEEPALIVE support for OS/2

The TCP/IP components in OS/2 offer network attachment for printers. However, these TCP/IP components do not always detect connection failures if a point-to-point session between the OS/2 machine and the device has failed (e.g. in connection with a printer being abruptly powered off). This may result in serious problems for IPDS printers in sessions with PSF/2.

Now, support for the TCP KEEPALIVE facility has been added to the TCP/IP components of OS/2 to detect all communication failures. PSF/2 directs TCP to send a KEEPALIVE transmission on a TCP connection remaining inactive for an extended period. If the KEEPALIVE transmission is not acknowledged, the TCP assumes that the connection partner has been lost and subsequently reports a failure to PSF/2.

The frequency of these transmissions depends on the configuration of the OS/2 TCP/IP environment. The default for OS/2 is two hours or more. This, however, can be adjusted. These values apply to all TCP applications that request KEEPALIVE transmissions.

In the following, you are provided with instructions for using the KEEPALIVE support facility added to the TCP/IP components for OS/2.

17.3 OS/2 KEEPALIVE configuration

The TCP/IP "inetcfg" command can be used to configure the "KEEPALIVE" parameter.

inetcfg KEEPALIVE=nnn

where nnn is the number of minutes a TCP connection must remain inactive before TCP generates a KEEPALIVE transmission for an application that requests them.
Default is 120 minutes.

The inetcfg command must be run each time the OS/2 system is started. Adding the inetcfg command to \tcpip\bin\tcpstart.cmd is a convenient way of automating this step.

Adding, e.g.

inetcfg KEEPALIVE=4

to \tcpip\bin\tcpstart.cmd causes TCP to send a KEEPALIVE transmission if a TCP connection has been inactive for 4 minutes and the application requested KEEPALIVE transmissions, as OS/2 now does. OS/2 recommends this TCP configuration setting to customers who use TCP/IP attached printers and the device.

If the KEEPALIVE transmission is not acknowledged, the TCP will attempt to re-connect up to 9 times. The interval between these attempts is fixed but short.

18. PSF/AIX Printing Using TCP/IP

This chapter provides details on:

Adding a TCP/IP attached printer
Setup of the KEEPALIVE TCP/IP feature

☞ **Requirements**

Before IPDS printing using TCP/IP can be accomplished, the following points need to be checked:

1. AIX1.2 with PTF U436937 or later must be installed.

The above conditions must have been met and the basic TCP/IP installation of the *PrintServer* (IPDS) completed before direct AFP / IPDS from PSF/AIX will be possible.

18.1 Adding TCP/IP attached printer

The port number is defined in the PSF/AIX SMIT " Add a TCP/IP-Attached Printer" panel.

1. Enter **Printer name**
   PSF/AIX uses the printer name you specify. Enter a name of up to 8 characters.

2. Enter **Internet address**
   The address in the TCP/IP network where the *PrintServer* is installed. Enter a 32-bit dotted decimal notation (e.g. 192.0.2.1).

3. Enter **Port number (5001)**
   The value chosen must match the value defined for the session in the *PrintServer* (IPDS). 5001 is the default port number of the first IPDS port no. in the *PrintServer* (IPDS).

18.2 KEEPALIVE support for AIX

The TCP/IP components in AIX offer network attachment for printers. However, these TCPIP components do not always detect connection failures if a point-to-point session between the AIX machine and the device has failed (e.g. in connection with a printer being abruptly powered off). This may result in serious problems for IPDS printers in sessions with PSF/AIX

Now, support for the TCP KEEPALIVE facility has been added to the TCP/IP components of AIX to detect all communication failures. PSF/AIX directs TCP to send a KEEPALIVE transmission on a TCP connection remaining inactive for an extended period. If the KEEPALIVE transmission is not acknowledged, the TCP assumes that the connection partner has been lost and subsequently reports a failure to PSF/AIX

The frequency of these transmissions depends upon the configuration of AIX TCP/IP environment. The default for AIX is two hours or more. This, however, can be adjusted. These values apply to all TCP applications that request KEEPALIVE transmissions.

In the following, you are provided with instructions for using the KEEPALIVE support facility added to the TCP/IP components for AIX

18.3 AIX KEEPALIVE support

The "**no**" (network options) command can be used by the root user to configure KEEPALIVE frequencies.

    no -o tcp_keepidle=nnn

    no -o tcp_keepintvl=nnn

    where nnn is in half-seconds.

The command "**tcp_keepidle**" specifies the interval of inactivity causing the TCP to generate a KEEPALIVE transmission for an application that requests them.
The default is 14400 (2 hours).

The command "**tcp_keepintvl**" specifies the interval between the nine retry attempts if a KEEPALIVE transmission is not acknowledged.
The default is 150 (75 seconds).

The "no" commands must be run each time the AIX system is started. Adding the "no" commands to /etc/rc.net is a convenient way of automating this step.

Adding e.g.

> no -o tcp_keepidle=480

> no -o tcp_keepintvl=80

to /etc/rc.net causes the TCP to send a KEEPALIVE transmission if a TCP connection has been inactive for 4 minutes and the application requested KEEPALIVE transmissions, as AIX now does. AIX recommends these TCP configuration settings to customers who use TCP/IP attached printers and the device.

To view current settings enter

> **no -a**

When the installation and configuration procedures for the PSF/AIX have been completed, you are ready for printing.

19. Problem Determination

This chapter describes how to monitor the operations of the *PrintServer* and how to troubleshoot the supported protocols during installation, configuration, and printing.

19.1 Monitoring tools

The operations of the *PrintServer* may be monitored using the SNMP (MIB II) or the LEDs on the rear panel.

19.1.1 SNMP support

The *PrintServer* has been added support for SNMP using TCP/IP as protocol for LAN access. The SNMP operates as a monitoring tool for the *PrintServer.*

19.1.1.1 What is SNMP

(Source: NMS Management Guide, Novell ManageWise 2.0)

SNMP (Simple Network Management Protocol) is an application protocol offering network management services in the Internet Protocol suite to operate in connection with installation, configuration and management of the PrintServer.

SNMP defines a client/server relationship. The client program is the connection to the SNMP agent (the PrintServer) which is referred to as the SNMP Management Information Base (MIB). The SNMP implementation in the *PrintServer* supports the MIB II.
There are, however, exceptions to the extension of MIB II support:

☹ The SET option on different objects (ARP table, ROUTE table, etc.) will not be supported and any attempt to SET the objects will be rejected.
☹ No support for EGP and Transmission Group.

By default the application uses the community string "public" for SNMP GET and SET operations. If the community string used by NMS (Network Management System) does not match the one expected by the SNMP agent in the managed device, the operation fails.

NOTE:
You should be aware that a small amount of knowledge is required for general use the SNMP. It is assumed that you have basic networking knowledge (protocols, addressing, network errors, etc). For more advanced use of SNMP, you are required a substantial amount of knowledge.

19.1.1.2 Preparing for use of SNMP

To use the SNMP, the SNMP related parameters for the *PrintServer* must be defined using one of the supported configuration tools (see chapter 3).

PS name
Specifies the attached PrintServer.

Contact name:
Specifies the contact person for this managed node.

System location:
Specifies the physical location of this node.

When the parameters have been defined, the operations may be monitored by the system administrator using *any* SNMP browser.

**Contact your point of purchase if you wish
further information on the use of browsers.**

19.1.2 LED Status error messages

The LED status error messages below indicate some problems encountered during printing.

Condition	LED Status		
	LAN	**Session**	**PRT**
Unit powered off/ power failure	OFF	OFF	OFF
Ring failure (e.g. Ring not present	Fast blink	OFF	OFF
No LAN contact (e.g. Boot reply)	Slow blink	OFF	OFF
Printer intervention or error/printer cable removed	ON	OFF	Slow blink on specific LEDs
Bad RAM	OFF	Fading ON OFF	ON OFF
LAN Error	ON ON	Fading ON OFF	ON OFF
Main checksum error (Microcode download needed)	ON ON	Fading ON OFF	ON OFF
Baseblock checksum error (Microcode download needed - Centronics only!)	OFF	Fading ON OFF	ON
DPRAM error (comm. error with IPDS top)	ON OFF	Fading ON OFF	ON OFF
BOOTBLOC checksum error (device needs new FLASH proms)	ON	Fading ON OFF	OFF
Rear panel switch in wrong position)	ON ON	ON OFF	ON ON

LED status error messages

19.2 Troubleshooting

This chapter helps you resolve some problems you may encounter when installing, configuring or operating the *PrintServer.*

To maintain print integrity if the *PrintServer* is powered off, the attached printer must also be powered off. The printers can be powered off independently of the *PrintServer.*

19.2.1 When installing

TCP/IP
The following are general guidelines for correcting problems with the installation of the *PrintServer.*

The functioning of the LEDs on the front panel is described below:

LAN, and PRT LEDs all flash

- Check the connection to the LAN. Reseat the LAN connector.

LAN LED continues to flash

- Check BOOTP server definition (including BOOTPTAB file definitions)

- Check that BOOTP server can be accessed

- Check that the BOOTP server is running.

- Check that the bootfile can be located (by comparing bootp type statement with file location; i.e. path).

- Run the BOOTP server diagnostics (that is using the debug op tion with the "-d-d-d-d-d" parameters).
  - use "-b" option if you have a bridged network.

- The *PrintServer* and an OS/2 BOOTP daemon can be separated by one or more LAN bridges or IP routers.

- In some cases, the *PrintServer* and OS/2 BOOTP daemon can also be separated by an IP router. The IP router must be specifically configured to pass certain broadcast frames.

NOTE: With certain IP router implementations, it is not possible to pass BOOTP requests. The *PrintServer* and the BOOTP server should therefore not be separated by such router.

LAN LED is lit but PRT LED is not lit

- *AFP printing using TCP/IP*
  - check that the port number and IP address used by the PPR (idaPSS, *ida ReRouter*, AS/400, PSF/2, PSF/AIX) are the same as those defined on the *PrintServer.*

  IPDS applications must use port nos. 5001 and 5002
  ICDS applications must use port nos. 5005 and 5006

- *Non-AFP printing using TCP/IP*
  - check that the IP address used by th e host is that defined in the *PrintServer.*

PSF indicated communication errors

- Ensure that a PCL printer is attached and powered on.

Message AIN1048E or 0420-049

PSF cannot link to the printer address.

- Check that port number matches that set up for the *PrintServer.*

- Check that your network is operational (e.g. by using the PING command).

- Check that the printer se ssion you are accessing is not already assigned to another host such as PSF/2, PSF/AIX, PSF for S/370-S/390 or PSF/400.

LAN LED is lit, PRT flashes, but no print is produced

- Check that the printer is online.

- Check that a printer intervention is not pending.

Message AIN0029 or 0420-029

- Check that the printer is online.

- Check that a printer intervention is not pe nding.

PRT LED flashes slowly

- Check that a printer intervention is not pending.

- Check that either a PCL or PostScript printer is attached.

Message AIN1049

Communication failure

- Check that the printer is ready (powered on and on-line).

- Check cabling.

19.2.2 When configuring

The following guidelines help you detect problem areas, particu larly when configuring the *PrintServer.*

BOOTPTAB file errors

You should avoid making the following syntax errors in the bootptab file:

- Line continuation character must be " \ " (i.e. backslash)

- Do not leave out " : " after tag values

- Remember to keep comments on separate lines
  (Comment lines are indicated as blank lines, spaces or a number
  sign (i.e. " # ").

Does the printer indicate an error message?
(for example status code, alarm and so on)

- Check the connection to the *PrintServer.*

- Check for printer physical errors (for example paper jam, out of
  paper, toner out, and so on).

Does the LED status of the *PrintServer* appear normal?

- Check for status of the LEDs.

Can you PING the *PrintServer* **?**

- If not, the reason may be that one of the bridge s is actually a router. In that case, the *PrintServer* and PSF/2-PSF/AIX should have different IP network IDs. PSF2/PSF6000 should have a default router and the *PrintServer* should be configured with a gateway address.

- You may also have used an invalid IP address in network.

Refer to the section *: "Testing PrintServer"* for a description of how to "PING".

Are you unable / able to generate a test printout?

***Unable*:**
- Check the connection and the configuration to the BOOTP server.

- Check the status of the attached PCL printer.

***Able*:**
- Check the configuration of PSF/2 or PSF/AIX.

- Check the connection from the *PrintServer* to the PSF/2 or PSF/AIX servers.

Have changes been made since the initial installation and configuration of the *PrintServer* **?**

If you suspect that changes have been made to LAN, PSF/2 or PSF/AIX or the bootp server since the initial installation and con figuration of the *PrintServer,* contact your system administrator.

- Check that the configuration of the bootp server complies with the requirements.

What are the symptoms you have recorded or detected?

Host systems record all errors in an error log file. For additional informa-tion, see the documentation for PSF/2, PSF/AIX, *ida PSS, ida ReRouter* or *ida IPPC.*

- Have any messages been produced?

- Make a list of all the symptoms you have recorded for subsequent problem determination.

Has an upgrade of microcode been performed?

Successfully
A successful microcode upgrade is indicated on the test printout with a new Version number.

Unsuccessfully
Turn the printer off for a few seconds and back on. If problems persist, revert to the microcode from the bootfile and repeat the upgrade process. Refer to the appendix section " *Microcode Upgrading".*

If the problem persists, refer to your general problem reporting proce dures or contact your point of purchase.

19.2.3 When printing

When operating via Win/OS2, you must make sure that the PrintServer is connected.

NetWare:

If you are printing via Novell NetWare you must check that the settings for the PSERVER (EPS) and the NPRINTER (ENP) are made correctly.

Make a settings printout to check whether you have configured correctly.

Below are examples of possible error situations and hints as how to remedy the situations.

NOTE:
When printing you should check the connection to the PServer viewing the NetWare menu "Active Connections".

Excerpt from test page with NetWare settings:

```
            ----- NetWare settings ----

NEST Component            : 00755.008
NCP mode                  : DS
Frame Types               : 802.2:YES    SNAP: NO
Preferred Server          :
Preferred DS Tree         :
DS Name Context           :o=IDA

EPS:
            Mode              : Bindery
            File Server       : xxxxxxx
            Print Server      : xxxxxxx
            Bindery Poll Timeout : 15
            Password usage    : Disabled
            Pserver  State    : Connecting...        ←──  1)

                        OR

                          Running...                 ←──  2)
ENP 1:
            Mode              : DS
            File Server       : xxxxxxx
            Print Server      : xxxxxxx
            Printer Number    : 9
            Printer State     : Waiting for job      ←──  3)
            Share Timeout     : 20 secs

ENP 2:
            Mode              : Bindery
            File Server       : xxxxxxx
            Print Server      : xxxxxxx
            Printer Number    : 0
            Printer State     : Connecting           ←──  4)

                        OR

                        : Session undefined/invalid  ←──  5)

            Share Timeout     : 20 secs
```

1. **Pserver State: Connecting**
   If the test page reports that the state of the PServer is
   "**Connecting...**"then the PServer has not been configured correctly.
   Check the configuration and make the necessary changes and
   amendments.
   Possible errors could be:
   - A password is configured on the server for this EPS, but may be
     missing in the *PrintServer.*
   -The Preferred Server, File Server or Print Server is not configured
     correctly.

2. **PServer state : Running.**
   "Running..."means that the PServer has been configured correctly and is ready to receive print jobs and Nprinters can be attached.

3. **Printer State : Waiting for job**
   "Waiting for job..."status. The" printer is idle and ready for processing print jobs.

4. **Printer State : Connecting**
   "Connecting..."There is an error in the configuration of the ENP or the PServer.
   Network attachment is achieved.
   Verify that the specified PServer is running either as an embedded PServer or externally on a server.
   The ENP error can e.g. be:
   -The configuration of the ENP on the NetWare server does not match the one in the *PrintServer*.
   -The printer number is incorrect or someone else is currently using the very printer

   Check the configuration and correct the error(s).

5. **Printer State: Session undefined / invalid**
   "Session undefined / invalid"indicates that there is no connection to the network for the ENP.
   Check the ENP Mode and File Server name.

19.3 Intervention required (IRQ)

The *PrintServer* supports IRQ- Intervention Required. When the intervention required status message is sent, the print session will be responsible for the recovery action.

To control the printer error conditions, two separate IRQ timers are available:

- IRQ timeout
  Used to report printer error / fault conditions to the initiating applicati   on

- Hold timeout
  Used to report printer hold conditions to the initiating application.

The *PrintServer* handles the following intervention status conditions:

- Online/Offline
- Printer Intervention
- Paper Out
- Paper Jam
- Cover/Door Open

These IRQ conditions vary, however, depending on the print session. For a description of the differences, see below.

IPDS

Online / Offline	1) Intervention conditions that can be reported presently will be supported. 2) The HOLD timeout parameter is used to determine when hold conditions are reported to the host.
Printer Intervention	Intervention conditions that can be reported presently will be supported.
Paper Out	Intervention conditions that can be reported presently will be supported.
Paper Jam	Intervention conditions that can be reported presently will be supported.
Cover / Door Open	Intervention conditions that can be reported presently will be supported.

ICDS

Online / Offline	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The HOLD timeout parameter is used to determine when hold conditions are reported to the host.
Printer Intervention	The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is placed Online, printing will restart from the last checkpoint.
Paper Out	The intervention condition is reported to the host as an extended status code. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint.
Paper Jam	The intervention condition is reported to the host as an extended status code. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint.
Cover / Door Open	The intervention condition is reported to the host as an extended status code. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint.

LPD

Online / Offline	1) There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy). 2) The HOLD timeout parameter is used to determine when hold conditions are reported to the host.
Printer Intervention	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Out	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Jam	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Cover / Door Open	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).

ENP

Online / Offline	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The user can request the printer status and receive information on the printer such as paper out or offline condition. 3) The HOLD timeout parameter is used to determine when hold conditions are reported to the host
Printer Intervention	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The user can request the printer status and receive information on the printer such as paper out or offline condition.
Paper Out	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the paper out problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The user can request the printer status and receive information on the printer such as paper out or offline condition.
Paper Jam	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the paper jam problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The user can request the printer status and receive information on the printer such as paper out or offline condition.
Cover / Door Open	1) The intervention condition is reported to the host. The user is required to perform intervention recovery (i.e. attend to the printer problem). Once the printer is Online, printing will restart from the last checkpoint. 2) The user can request the printer status and receive information on the printer such as paper out or offline condition.

SCS

Online / Offline	1) There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy). 2) The HOLD timeout parameter is used to determine when hold conditions are reported to the host.
Printer Intervention	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Out	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Jam	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Cover / Door Open	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).

PRT

Online / Offline	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Printer Intervention	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Out	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).
Paper Jam	There will be no response or notification with any intervention **condition**, i.e. the print data remains pending in the printer (printer appears busy).
Cover / Door Open	There will be no response or notification with any intervention condition, i.e. the print data remains pending in the printer (printer appears busy).

19.4 Printer errors in front panel

The PCL printer may also display error messages. Try to correct the problem by turning power off for a few seconds and then back on again. If the error message is still displayed, use the following:

Printer may indicate a physical printer intervention message

- Check for pending printer intervention messages, such as paper jam, out of paper, out of toner, and so on.

Printer indicates an error code

- Error codes are printer specific, refer to the printer specific documentation.

19.5 Problem reporting

If you have a problem which you are unable to solve, contact your point of purchase for help. Have the following in formation available:

- Microcode version number (see the test page for the number)
- Printer type and model
- Product serial number (affixed to the base of the unit)
- Switch settings (i.e. cabling and selected printer type)
- Test page
- A short description of the error symptoms
- All error.log files (PSF/2 or PSF/AIX)

APPENDICES

Appendix A: Configuration using setup file

Appendix B: Supported FSL functions

Appendix C: Microcode upgrading

Appendix D: idaSetup

Appendix E: Test printout

Appendix F: Error messages

Appendix G: List of abbreviations

Appendix H: Xerox Product Platforms

Appendix A: Configuration Using Setup File

> *You should only modify or change the settings via the bootfile for strictly necessary purposes.* Otherwise, you are recommended to use e.g Psinst32 or Telnet. (see the chapter on Configuration)

Appendix A 1: Configuring via parallel port

The default LAN and TCP/IP parameters may be set up via the parallel port.

If this method is used instead of using the configuration file, then the IP default (IP address gateway and subnet mask) must be specified in the configuration file when the *PrintServer* is set up for the first time.

The configuration file must be sent via the centronics port.

NOTE:
On OS/2 workstations use **IBMNULL** as printer driver
On DOS or Windows use a **Generic /Text** printer driver only.

1. Select the file you wish to send to the parallel port.

2. In this file you write the following command sequence at the *top* of the file:

&&??##N1,0#<CR>

3. Type:

END

4. To send the file, you write the following at the command prompt.

copy <filename> <lpt1>

where lpt1 is the PC's centronics port.

5. For the settings to become effective you must either:
   - turn the *PrintServer* off and on
     or
   - define the *PrintServer* to boot from the configuration file

   Type:
   BEGIN_CONFIGURATION IDAPS
         BOOT

END

6. Make a settings printout to verify the new settings.

Appendix A 2: Configuration file parameters

This appendix describes the entire range of parameters available for programming the *PrintServer.*

BEGIN_CONFIGURATION IDAPS

LOCAL_MAC
Description: Sets the locally administered MAC address
Range: 0x400000000000 - 0x7FFFFFFFFFFF
Default: N/A

SEL_MAC
Description: Selects the universally defined or the locally administered MAC address
Range: LOCAL (0)
UNIVERSAL (1)
Default: UNIVERSAL

ENABLE_TCPIP
Description: Enables or disables the TCP/IP protocol
Range: NO (0)
YES (1)
Default: YES

ENABLE_NETWARE
Description: Enables or disables NetWare (IPX/SPX) protocols.
Range: NO (0)
YES (1)
Default: YES

ENABLE 802_2
Description: Enables or disables the 802.2 settings
Range: NO (0)
YES (1)
Default: YES

ENABLE_PU_LU
Description: Enables or disables the use of the NetWare (IPX/SPX) protocols.

Range: NO (0)
                YES (1)
Default: YES

BOOT
Description: The BOOT parameter causes the *PrintServer* to compare new
                and old settings. If the current configuration is identical to the
                new setting, the latter will become non-operational. If on the
                other hand the new setting is different from the current, the
                PrintServer is rebooted immediately.
Range: NO (0)
                YES (1)
Default: N/A

SHARETIMEOUT
Description: Sets the share timeout value
Range: 0 - 9999 secs
Default: 20 secs

HOLDTIMEOUT
Description: Sets the hold timeout interval for an Offline condition.
Range: 0 - 9999 secs
Default: 600 secs

IRQTIMEOUT
Description: Sets the IRQ timeout value. Paper Error / Paper out conditions
Range: 0 - 9999 secs
Default: 60 secs

PS_NAME
Description: An administratively assigned name for the managed
                node. By convention, this is the node's fully qualified
                domain name.
Range: 255 ASCII characters
Default: --

CONTACT_PERSON
Description: Textual identification of the contact person for this
                managed node together with information on how to
                contact this person.
Range: 255 ASCII characters
Default:

LOCATION
Description: The physical location of this node (be it building, floor or
                office room).
Range: 255 ASCII character
Default:

END

Description: Ends the substate and sets the settings state to
HOME state.

BEGIN_CONFIGURATION SESSION

SESSION

Description: Starts definitions for a session. A session contains
one INPUT_DEF, one TRANSFORM_SEL and one
OUTPUT_DEF (see these descriptions below).
Range: 0-255
Default: N/A

INPUT_DEF

Description: Starts definitions for an input definition.
Contains the Session Master type and
incarnation (see Incarnation below)
Range: N/A
Default: N/A

TRANSFORM_DEF

Description: Starts definitions for a transformation definition.
Contains the Session Transform type
and ID (see ID below)
Range: N/A
Default: N/A

OUTPUT_SEL

Description: Starts definitions for output. Contains the Session Slave
type and ID.
Range: N/A
Default: N/A

ID

Description: Selects the identification of the settings
Range: 0-255
Default: N/A

PRESENT

Description:
Range:
Default:

BEGIN_CONFIGURATION TCPIP

HOSTNAME

Description: Sets the Host name for the device
Range: String of printable characters

Default: -

BOOTP
Description: Defines the use of a Bootp server
Range: NO   (0)
              YES (1)
Default: YES

TCP_MSS
Description: Sets the TCP/IP Maximum Segment Size in bytes
Range: 256-4096
Default: 1400

TCP_WINDOW
Description: Sets the TCP/IP Window Size in bytes
Range: 256-8192
Default: 4200

MICROCODE
Description: Defines the path on the Bootp server where a microcode
              is placed. Used for subsequently download via TFTP.
Range: Fully qualified path without derive assignment. Path must
              reside on the same drive as the TCP/IP software on the
              Bootp server.
Default:

DEFAULT_IP
Description: Sets the default IP address
Range: 0.0.0.0 - 255.255.255.255
Default:

DEFAULT_SM
Description: Sets the default Subnet Mask
Range: 0.0.0.0 - 255.255.255.255
Default:

DEFAULT_GW
Description: Sets the default Gateway address
Range: 0.0.0.0 - 255.255.255.255
Default:

BEGIN_CONFIGURATION NETWARE

LSL_FRAME_802_2
Description: Selects 802.2 frametype support
Range: NO (0)
             YES (!)
Default: YES

LSL_FRAME_802_SNAP
Description: Selects 802.2 SNAP frametype support
Range: NO   (0)
             YES (1)
Default: NO

LSL_FRAME_802_3
Description: Selects 802.3 frametype support
Range: NO   (0)
             YES (1)
Default: YES

LSL_FRAME_DIX_II
Description: Selects DIX II frametype support
Range: NO   (0)
             YES (1)
Default: NO

NCP_MODE
Description: Selects NPC mode
Range: DISABLED
             BINDERY
             DS
Default: DISABLED

NCP_PREFERRED_SERVER
Description: Selects preferred server (*in Bindery mode only*)
Range: ASCII string
Default: -

NCP_PREFERRED_DSTREE
Description: Selects preferred DS tree (*in DS mode only*)
Range: ASCII string
Default: -

NCP_DSNAME_CONTEXT
Description: Selects DS name context (*in DS mode only*)
Range: ASCII string
Default: -

EPS_MODE

Description: Selects EPS mode
Range: DISABLED
             BINDERY
             DS
Default: DISABLED

EPS_PRINTSERVER

Description: Selects the particular EPS
Range: ASCII string
Default:

EPS_PASSWORD

Description: Selects which password the EPS should use when
             logging into the fileserver.
Range: ASCII string
Default:

EPS_FILESERVER

Description: Selects which fileserver the EPS logs into.
Range: ASCII string
Default:

EPS_MSG_FILENAME

Description: Selects which msgfile the EPS should use.
Range: ASCII string
Default:

PREFERRED_DSTREE

Description: Selects the NDS tree in which the ENP is located.
Range: 128 ASCII characters
Default:

DSNAME_CONTEXT

Description: Selects the context e.g. the path in the NDS tree to the ENP.
Range: 255 ASCII characters
Default:

USER_NAME

Description: Selects a user in the NDS tree with access to configuring
             the ENP.
Range: 56 ASCII charcters
Default:

USER_PASSWORD

Description: Selects the password for the user to type when logging
             into the NDS.
Range: 56 ASCII charcters
Default:

BEGIN_CONFIGURATION IDA 802.2

ALIASNAME
Description: The Alias name of the 802.2 protocol
Range:
Default:

BEGIN_CONFIGURATION PU

BLOCKID
Description: An IBM product specific number
Range: 0 - 4095
Default: 0x05D

IDNUMBER
Description: A binary value which together with Block ID identify a
               specific station uniquely within a customer network
               installation.
Range: 0 - 1048575
 Default   0

REMOTE_MAC_ADDR
Description: The MAC address of the remote host
Range: 0x000000000000 - 0xFFFFFFFFFFFF
 Default

REMOTE_SAP
Description: Service Access Point of the remote host
Range: 0x04 - 0xEC, modulus 4
 Default: 0x04

LOCAL_SAP
Description: Service Access Point of the device
Range: 0x04 - 0xEC modulus 4
 Default: 0x04

BEGIN_CONFIGURATION PPDX

PORT_PORT
Description: The TCP/IP port number
Range: 5001, 5002, 5005, 5006
Default: N/A

RESPONSE

Description: Sets the Response timeout. The response timeout is used when a KEEPALIVE message is sent. If the message is not deleted from the socket (sent and TCP acknowledged), before response timeout, the session is assumed interrupted.

Range: 0-9999

Default: 20

KEEPALIVE

Description: Sets the KEEPALIVE timeout. For every KEEPALIVE period, an empty data buffer is sent to the remote node to check whether the connection is still active.

Range: 0 (disabled)
1-9999

Default: 60

BEGIN_CONFIGURATION LPDX

LPD_QUEUE

Description: The LPD queue name. This parameter is used for matching the "instream" queue name.
For details, see the Begin_Configuration PAR2IN x keyword.

Range: ASCII string

Default:

LPD_AUTOCR

Description: Specifies the LPD to convert all CR to a CR and LF.

Range: NO (0)
YES (1)

Default: N/A

BEGIN_CONFIGURATION ENPX

PRINTERNUMBER

Description: Selects which printer number to be used. .

Range: 0-255

Default: 0

FILESERVER

Description: Selects which fileserver to attach.

Range: ASCII string

Default: -

PRINTSERVER
Description: Selects which printserver to use.
Range: ASCII string
Default: -

MODE
Description: Selects ENP mode.
Range: DISABLED
BINDERY
DS
Default: DISABLED

SHARETIMEOUT
Description: Sets the sharetimeout value
Range: 0-9999
Default: 20

BEGIN_CONFIGURATION PAR2IN X

INSTREAM_PAR2IN
Description: Specifies the data path for PRT1 and IPDS data.
Range: PRT1 (0)
IPDS (1)
Default: N/A

SHARETIMEOUT
(see description above)

BEGIN_CONFIGURATION TESTPGX

INSTREAM_TESTPG
Description: Specifies the incoming data
Range: BASE (0)
IPDS (1)
Default: N/A

BEGIN_CONFIGURATION IPDS1

IPDS_VP
Description: Selects the IPDS Virtual Printer to be used in the
data path.
Range: 1 --> X
Default: N/A

BEGIN_CONFIGURATION SNA_PRINT

INSTREAM_SNA_PRINT
Description:
Range:
Default:

BEGIN_CONFIGURATION ICDS 1

LANGUAGE_SEL
Description: Selects the printer language
Range: POSTSCRIPT (0)
              PCL 5 (1)
Default: N/A

AUTOCONFIG
Description: Defines whether the printer should be queried for its
             configuration.
Range: BASE (Executed by base interface (2))
              YES   (TRUE, (1))
              NO   (FALSE, (2))
Default: YES

COLORAFP
Description: Printing with AFP colours.
Range: NO (0)
              YES (1)
Default: NO

NOGRAPHICS
Description: Selects whether to send HPGL graphics or bitmaps
             to the printer.
Range: NO (0)
              YES (1)
Default: NO

QUERYPAGES
Description: Defines whether to query for printed pages.
Range: NO (0)
              YES (1)
Default: NO

HOLDTIMEOUT
(See description above)

IRQTIMEOUT
(See description above)

DLDTIMEOUT
Description: Deadlock detection used to release forced queries.
Range: **-**
Default: **-**

AFPTRAY_DEF 1
Description: Starts definitions for an AFP tray
Range: 0 - 255
Default: N/A

TRAY_SEL
Description: Selects the tray mapping to the printer definition.
Range: 1 255
Default: N/A

MANUAL
Description: Selects the tray for manual feed operation
Range: NO (0)
              YES (1)
Default: NO

ENVELOPE
Description: Selects the tray for envelope feed
Range: NO (0)
              YES (1)
Default: NO

BEGIN_CONFIGURATION PRINTERX

DUPLEXINSTALLED
Description: Defines whether the attached printer supports
              duplex printing
Range: YES (TRUE   (!))
              NO   (FALSE (0))
Default: NO

OFFSETINSTALLED
Description: Used for offset stacker
Range: NO (0)
              YES (1)
              IIISI (2)
Default: NO

TRAY_DEF X
Description: Starts definition of a printer tray
Range: 1 - 9
Default   N/A

PAPER_SEL
Description: Selects the paper type
Range: ASCII string
Default   N/A

PAPER_DEF
Description: Starts definition of a paper type
Range: ASCII string
Default   N/A

PAPERSOURCE
Description: PCL paper source identifier.
Range: -
Default   N/A

PAGEWIDTH
Description: PostScript page size width
Range: -
Default   N/A

PAGEHEIGHT
Description: PostScript page size height
Range: -
Default   N/A

PAGESIZE
Description: PCL page size identifier
Range: 0-255
Default   N/A

PRINTAREAX
Description: Defines X-offset from the left edge of the
                paper to the printable area. The value is
                defined in 300 dpi dots.
Range: 0..9999
Default   50

PRINTAREAY
Description: Defines Y-offset from the top edge of the
                paper to the printable area. The value is
                defined in 300 dpi dots.
Range: 0..9999
Default   50

PRINTAREAWIDTH
Description: Defines the width (X-extent) of the printable
                area. The value is defined in 300 dpi dots.
Range: 0..9999
Default   2380 (for A4 paper)

PRINTAREAHEIGHT

Description:	Defines the height (Y-extent) of the printable area. The value is defined in 300 dpi dots.
Range:	0..9999
Default	3407 (for A4 paper)

LOGICALPAGEX

Description:	Defines X-offset from the left edge of the paper to the printer's logical page. The value is defined in 300 dpi dots.
Range:	-999..999
Default	71 (for A4 paper)

LOGICALPAGEY

Description:	Defines Y-offset from the top edge of the paper to the printer's logical page. The value is defined in 300 dpi dots.
Range:	-999..999
Default	0

LOGICALPAGEWIDTH

Description:	Defines the width (X-extent) of the printer's logical page. The value is defined in 300 dpi dots.
Range:	0..9999
Default	2338 (for A4 paper)

LOGICALPAGEHEIGHT

Description:	Defines the height (Y-extent) of the printer's logical page. The value is defined in 300 dpi dots.
Range:	0..9999
Default	3507

LANGUAGE_DEF PCL 5

OFFSETREG

Description:	Defines the automatic PCL offset registration
Range:	YES (0)
	< > (1)
Default:	YES

GMACROS

Description:	Selects the use of graphic macros in printer
Range:	NO (0)
	YES (1)
Default:	NO

RASTEROP
Description: Selects PCL ROP3/MC raster operation
Range: NO (0)
   YES (1)
Default: NO

PATTERNS
Description: Selects PCL patterns
Range: NO (0)
   YES (1)
Default: NO

CTABLES
Description: Selects PCL colour tables
Range: NO (0)
   YES (1)
Default: NO

LANGUAGE_DEF POSTSCRIPT

TRAY_DEFX:

INPUTPRIO
Description: PostScript input priority
Range:
Default: N/A

MANUALFEED
Description: PostScript manual feed selection
Range:
Default   N/A

PAPER_DEF: (see description above)

DEFINE SNMP

AUTHEN_TRAPS
Description: Indicates whether the SNMP agent is permitted to generate authentication failure.
Range: DISABLED (0)
   ENABLED (1)
Default: ENABLED

TRAP_DEST

Description:	Starts the definition for an SNMP TRAP destination. Contains a community name and a destination host.
Range:	0-255
Default:	N/A

DEST_HOST

Description:	The internet protocol (IP) address of a host (SNMP manager) to receive TRAP messages.
Range:	0.0.0.0 - 255.255.255.255
Default:	N/A

TRAP_COMM_NAME

Description:	Community name. A unique string of characters used by the manager to recognise and validate the source of the TRAP information. .
Range:	255 ASCII characters
Default:	-

ACCESS_AUTH

Description:	Starts definition for an SNMP Manager Access Authorisation used for verifying the fact that a host is authorised to request SNMP information from the node. Contains community name, network address, network mask and read/write access. .
Range:	0-255
Default:	N/A

AUTH_COMM_NAME

Description:	Community name. A Unique string of characters used to verify that a request for SNMP information is valid. The community name is similar to a password.
Range:	255 ASCII characters
Default: -	

NETWORK_ADDR

Description:	Used for validating access authorisation for the requesting manager.
Range:	0.0.0.0. - 255.255.255.255
Default:	N/A

NETWORK_MASK

Description:	Used for validating access authorisation for the requesting manager.
Range:	0.0.0.0. - 255.255.2 55.255
Default:	N/A

ACCESS

Description: Allows authorised managers to read or read/write
              to the management information base on this
              SNMP agent. .

Range: R (0)
              R/W (1)

Default: N/A

Appendix B: Supported FSL Functions

The i-data FSL concept has been implemented in the *PrintServer* to port IBM 3270 and IBM 5250 environments to LAN using the same host applications as before.

If you wish to operate via the i-data FSL functions, you are to see the file on the documentation diskette:

💾   **FSL_REF.PDF**

This document provides an outline description of the use of the FSL module, and an overview of the supported FSL functions, with syntax and values. For advanced setup and use, you are to consult the programmer's guide.

Laser Printers:
For IBM 3270 environment support: Laser 3270 Programmer's Guide, doc. no. D62078
For IBM 5250 environment support: Laser 5250 Programmer's Guide, doc. no. D62081

These documents will provide in-depth descriptions of all the supported FSL functions.

PrintServer FSL drivers

Included in the product kit is a diskette with all the supported drivers for printing in IBM 3270 or 5250 environment. The easiest way to download a driver is using PSinst32. See the section on the PSinst32 for details of the drivers and how to download.

Appendix C: Microcode upgrading

The *PrintServer* supports an online microcode upgrade facility permitting the installation of revised product microcode.

Operation of this facility will be possible via Psinst32 and the TCP/IP boot server.

> **CAUTION:**
> - During the initial 20-30 seconds after the microcode download, a failure (power off) will have fatal consequences, because the code will be lost and the previously stored code erased. If this happens, a basic code still remains in the flash to allow redownload of code. But download can then only take place via the parallel port.
> - You must always connect printer to PARALLEL port.

Appendix C.1: Upgrading Microcode via Parallel port

The *PrintServer* microcode can be upgraded via the PAR1 port by using a PC containing the microcode in the shape of a file.

To download the microcode via the parallel port follow these guidelines:

1. Power the printer OFF and connect a PC to the PARALLEL port using a centronics cable.

2. Power up the printer. When the session LED is lit, press the test key shortly.

3. When the printer generates a test page with the message: "..Awaiting microcode download", the *PrintServer* is ready for download.

4. Type the following command at the PC's command-prompt :

   "**copy 0xxxxx.B80 lpt1 /b**"

   where "0xxxxx.B80" is an example of a firmware file.[1]

> **NOTE:**
> If you are making use of printer drivers in connection with your PC's centronics port, it is important that these drivers are temporarily disabled while you perform

---

[1] The suffix .B80 may be case sensitive depending on the operating system.

the actual microcode download using the "copy"-command.
Otherwise the printer drivers may interfere in the microcode
image sent to the *PrintServer* implying serious problems.
*You should use a generic/text printer driver when running Windows
environment and IBM NULL when running in OS/2.*

5. Pay attention to the LED's on the *PrintServer* rear panel. These will
   now blink very quickly - one after the other. This is an indication of the
   microcode download taking place.

6. After the download process (time will depend on the PC's hardware)
   the "PAR" LED will stay lit. The remaining LEDs will be off.

7. Your *PrintServer* has now been equipped with a new microcode.

8. Power the *PrintServer* printer **off** and back **on** for the new microcode to
   become effective.

Press the test key in order to verify the new microcode level stated on the
test printout page.

Appendix C.2 Upgrading Microcode via PSinst32

See section 3.3.8 for details on this.

Appendix C.3 Upgrading Microcode via TCP/IP Boot Server

The microcode can be downloaded to the *PrintServer* using the TCP/IP
protocol TFTP:

1. Customising the BOOTP server data base access file (BOOTPTAB file
   entry for the device with a bootfile parameter).

2. Customising the bootfile entry (customising the bootfil e to indicate the
   path to the microcode).

3. Power the printer off/on.

4. Validate the update microcode.

Preparing for Microcode Upgrade via TCP/IP

Prerequisites:

* Microcode update file supplied by your point of purchase distributor

- BOOTP server access (BOOTPTAB file)

- Bootfile (configuration file **<name.cf2>)**

Update process

1. Generate a test printout from the *PrintServer* by pressing the TEST
    key. (Ensure that no sessions are active.)

2. Edit the BOOTPTAB file for the *PrintServer* device address.
    Add the bootfile parameter, e.g. bf = /<pathname>/<filename>
    (remembering to use the forward slash for the path)

OS/2:

```
ida.tcp.network3.com: sm=255.255.255.0: bf=/tcpip/etc/myfile.cf2:\
gw=192.0.110.0: ht=eth: ha=00036E0004A9: ip=192.0.110.1:
```

AIX:

```
ida.tcp.network3.com: sm=255.255.255.0: bf=/etc/myfile.cf2:\
gw=192.0.110.0: ht=eth: ha=00036E0004A9: ip=192.0.110.1:
```

3. Edit either the configuration file or use the Telnet to change the
   microcode (Change or add the value for the microcode keyword
   parameter to indicate the new microcode, pathname, and file.)

   NOTE:

   - **Do NOT rename the microcode file** (as the filename reflects the
     microcode version). If it does not have a file type, do not give it one.
     Renaming the file will cause the *PrintServer* to hang in a loop.

   - On AIX, you must ensure general read access to the microco de file
     (TFTP users have login "nobody").

     The microcode filename has the fol lowing format and should not be
     changed:

     0uuXXYZZ.B80

     where

uu is the specific firmware number
XX represents version
Y   represents variant
ZZ represents release no. - generally not stated.

e.g.:   0uu020.B80
(microcode level 2, < > product (0))

- Ensure that TFTP read access to this file is allowed.

4. Restart the BOOTP server. The *PrintServer* checks for new microcode.

5. Power the *PrintServer* off and back on again.

   NOTE:
   A microcode upgrade will only be performed if the name of
   the microcode file is different from the name of the version
   currently operating in the *PrintServer.*

6. "PSX3 | 5108 Awaiting microcode download" message is now printed.

7. During download, the LEDs will be blinking alternately.

8. Now print a Test Page (by pressing Test button) and check that the
   Version number on the test printout has changed to the new Version
   (see the following section: "Problem Determination").

Appendix C.4 Problem Determination

- **What action do I take if a communication error occurs during the upgrade process?**

    If the microcode download fails while you are using the TCP/IP boot server, power the *PrintServer* off and back on again.

Appendix D: idaSetup - IPDS configuration

If equipped with an IPDS module

idaSetup is a GUI (*graphical user interface*) program developed with the purpose of setting up the IPDS protocol converter via a PC share port or from a host.

> *For details on how to configure the <u>IPDS parameters for</u> the PrintServer using the program idaSetup, see the separate documentation for this.*
> *The manual is available as an electronic document.*
> *See the supplied "Documentation" kit.*

Appendix E: Test printout

TEST key

Pressing the TEST key on the rear panel once generates a settings printout. This test printout consists of two or more pages: The first two pages contain details of device settings and information related to the protocol used (i.e. TCP/IP). The remaining pages contain settings printout for the IPDS or FSL module.

Appendix F: Error messages

The error codes stated below may occur during operation. If you are faced with an error situation, i.e. if a **F**atal error or an **E**rror code occur, you should contact your system administrator or your local i-data distributor for help and assistance.

Valid error levels:

Information
Warning
Error
Fatal Error

Error code	Error level	Description
0x4604	**F**	Internal logical error
0x4700	**E**	ICDS scanner error, ICDS command = %x, error code = %x

The error code (E) is a bitmap with the following definition:

0x01	Data truncated
0x02	Unsolicited data
0x04	Lacking parameter
0x08	Surplus parameter
0x10	Unknown command

Error code	Error level	Description
0x4701	**E**	ICDS driver detected error, ICDS command = %x, error code = %x

The following error codes (E) are defined:

0x00	Driver has been cancelled
0x01	Range check
0x02	Printer lost
0x03	State check
0x04	Sequence check
0x05	Memory exhausted
0x06	Undefined font
0x07	Undefined macro
0x08	Deadlock timeout
0x09	Path error
0x0a	Not supported

0x5002	**F**	Hardware error in EEPROM	
0x5003	**F**	EEPROM checksum error	
0x5004	**E**	Settings invalid	
0x5010	**F**	Rear Panel switch in invalid position	
0x5100	**F**	Checksum error in FLASH (boot block)	
0x5101	**F**	Checksum error in FLASH (base block)	
0x5102	**F**	Checksum error in FLASH (main block)	
0x5108	**I**	Awaiting microcode download	
0x5109	**I**	Awaiting microcode download (bad base block)	
0x5110	**I**	Awaiting microcode download (bad main block)	
0x7001	**F**	RAM error	
0x8100	**F**	DPRAM error	
0x8101	**F**	DPRAM error. (Communication error with IPDS top)	
0x8200	**E**	LAN error	
0x9100	**W**	TFTP error : File doesn't exist	
0x9101	**W**	TFTP error : Couldn't connect to TFTP server	
0x9102	**W**	BOOTP error : Couldn't access BOOTP server	
0x9200	**E**	Microcode download failure	
0x9201	**E**	Microcode error : Bad id string	
0x9202	**E**	Microcode error : Bad boot block checksum	
0x9203	**E**	Microcode error : Bad base block checksum	
0x9204	**E**	Microcode error : Bad main block checksum	

Appendix G: List of abbreviations

ARP	Address Resolution Protocol
BOOTP	Bootstrap Protocol
CSD	Corrective Services Diskette
ENP	Embedded Nprinter
EPS	Embedded Print Server
FSL	Function Select via the Line
FTP	File Transfer Protocol
HTML	HyperTexr Markup Language
HTTP	HyperText Transfer Protocol
ICDS	i-data Compressed Data Stream
ICMP	Internet Control Message Protocol
IP	Internet Protocol
IPDS	Intelligent Printer Data Stream
IRQ	Intervention ReQuired
LED	Light Emitting Diode
LPD	Line Printer Daemon
LPR	Line Printer Requester
MAC	Medium Access Control
MIO	Modular Input / Output
NetBios	Network Operating System
NetBEUI	NetBios Extended User Interface
PPD	Page Printer Daemon
PPR	Page Printer Requester
PS	PostScript
PSF	Print Service Facility
PSS	Printer SubSystem
SCS	SNA Character String
SMIT	System Management Interface Tool
SMB	Server Message Block
SNA	System Network Architecture
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
UDP	User Datagram Protocol

Appendix H: Xerox Product Platform

Coax	Supported Printers
External	
Xerox LS 3270	Any Xerox decentralized PCL printer
Xerox FS 3270	Any Xerox decentralized PCL printer
Xerox Flex + Xerox 3270 PCL/XES	Any Xerox decentralized XES & PCL printer
External IPDS	
Xerox FS 3270 IPC	Any Xerox decentralized PCL printer
Internal	
Xerox 4500/3270	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3270 XES/PCL	Xerox 4030, 4197
Xerox 4213/3270 XES/PCL	Xerox 4213
Internal IPDS	
Xerox 4500/3270 IPC	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3270 IPC	Xerox 4030, 4197
Xerox 4213/3270 IPC	Xerox 4213
Twinax	**Supported Printers**
External	
Xerox LS 5250	Any Xerox decentralized XES & PCL printer
Xerox FS 5250	Any Xerox decentralized XES & PCL printer
Xerox Flex + Xerox 3x-400 PCL/XES	Any Xerox decentralized XES & PCL printer
External IPDS	
Xerox FS 5250 IPC	Any Xerox decentralized PCL printer
Internal	
Xerox 4500/3x-400	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3x-400 XES/PCL	Xerox 4030 and 4197
Xerox 4213/3x-400 XES/PCL	Xerox 4213
Internal IPDS	
Xerox 4500/3x-400 IPC	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3x-400 IPC	Xerox 4030 and 4197
Xerox 4213/3x-400 IPC	Xerox 4213
Token Ring	**Supported Printers**
External	
Xerox PS TR	Any Xerox decentralized printer
External SCS	
Xerox PS TR 3270	Any Xerox decentralized PCL printer
External SCS/DCA	
Xerox PS TR 5250	Any Xerox decentralized PCL printer
External IPDS	
Xerox PS IPC TR	Any Xerox decentralized PCL printer
Internal	
Xerox 4500 PS TR	Xerox 4505, 4510, 4517, 4520
Internal IPDS	
Xerox 4500 PS TR IPC	Xerox 4505, 4510, 4517, 4520
Ethernet	**Supported Printers**
External	
Xerox PS ETH	Any Xerox decentralized printer
External SCS	
Xerox PS ETH 3270	Any Xerox decentralized PCL printer
External SCS/DCA	
Xerox PS ETH 5250	Any Xerox decentralized PCL printer
External IPDS	
Xerox PS IPC ETH	Any Xerox decentralized PCL printer
Internal	
Xerox 4500 PS ETH	Xerox 4505, 4510, 4517, 4520
Internal IPDS	
Xerox 4500 PS ETH IPC	Xerox 4505, 4510, 4517, 4520